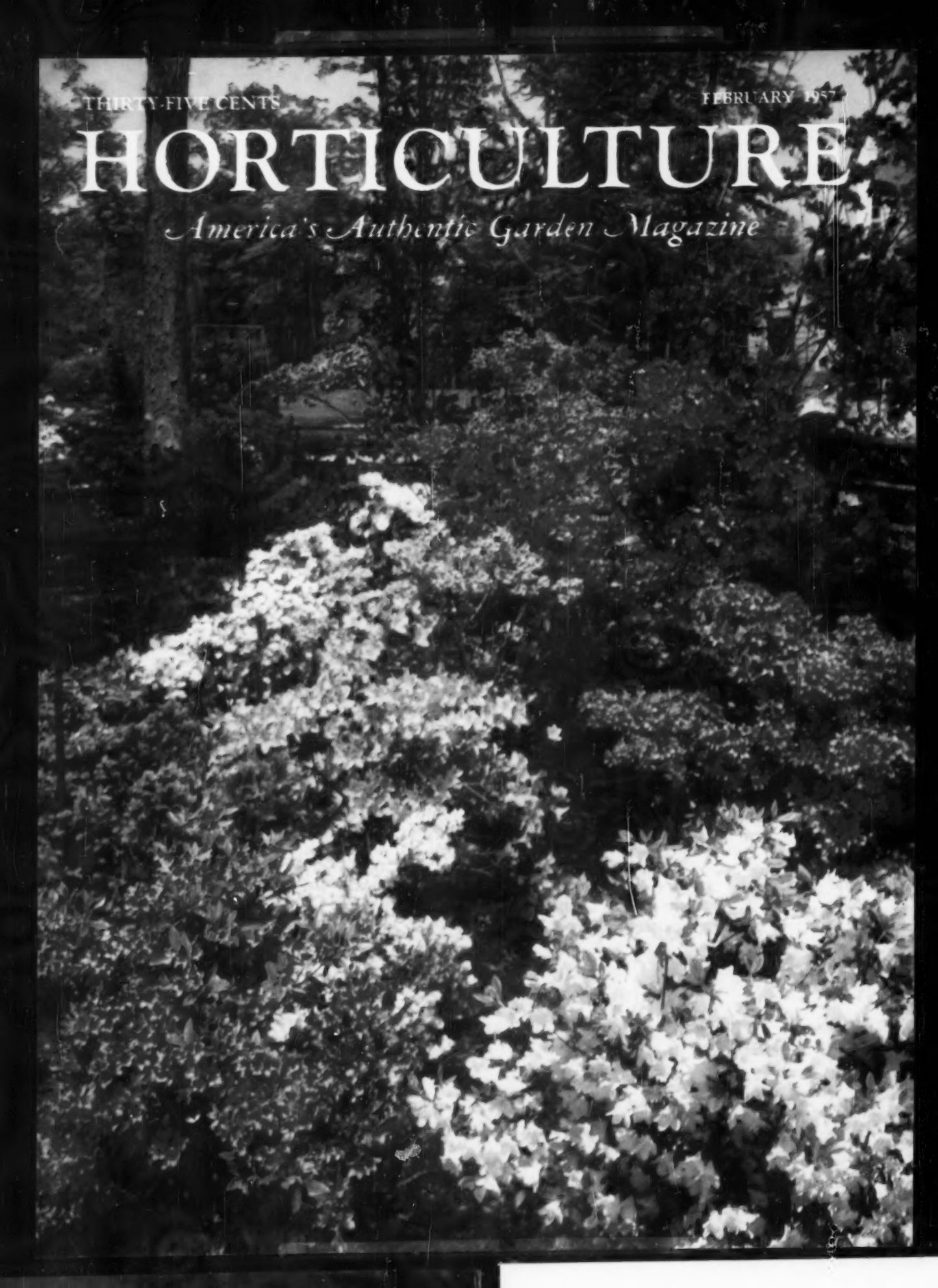
THIRTY-FIVE CENTS

FEBRUARY 1957

HORTICULTURE

America's Authentic Garden Magazine

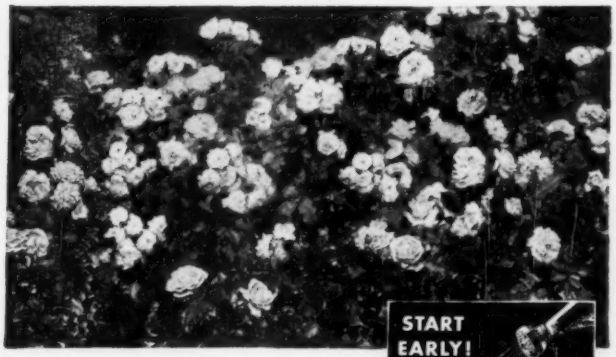


This Summer You Can Grow Roses 6 ft. Tall!

Inveterate Philadelphia Gardener Feeds His Plants with RA•PID•GRO

Have TWICE As Many Blooms — Best Color You've Ever Seen!

RA•PID•GRO will make your roses more beautiful than ever before! Three or four times more new growth, constant masses of bloom even in hot July and August. Whether you have 1 rosebush or 100, start using RA•PID•GRO early and see these amazing results yourself!



Use RA•PID•GRO in any sprayer, sprinkler or watering can. Feeds plants wherever it touches them.

IT'S SO EASY— WITH RA•PID•GRO

Feeds roses and other plants 5 ways at once... thru the leaves, buds, blooms, branches, roots. Just spray or sprinkle plants every week or 10 days from early spring to fall. Gets your plants started faster, keeps them growing and blooming vigorously. Use only 1 tablespoon RA•PID•GRO to each gallon of water. Dissolves instantly. You can also mix with your insecticide and apply both together. Saves time and work.

Famous Consulting Rosarian Reports on Antibiotics

R. H. Kraeger, Jenkintown, Pa. reports "astounding" results from RA•PID•GRO with antibiotics on roses. In tests on 284 plants, he noted "4 times more new growth, tremendous height, 200% more bloom and better foliage."

See These Startling Results in Your Garden

Annuals grow taller with more blooms, bigger flowers, richer colors. Vegetables have faster, healthier growth which makes them more tender, more flavorful. Lawns respond to RA•PID•GRO especially well because it feeds every individual blade of grass, then trickles down to roots.

George Lippincott, of Philadelphia, with his 6 ft. roses in picture above, is an enthusiastic user of RA•PID•GRO.

RA•PID•GRO is the complete plant food for everything that grows. For the loveliest garden you've ever enjoyed, get RA•PID•GRO now... start using it early, and continue regularly all season. The wonderful results will amaze you!

FREE Write now for pamphlet telling how to use RA•PID•GRO and antibiotics.

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The Original Liquid Plant Food

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Unique and Excellent for Starting
SEEDLINGS, SLIPS AND BULBS
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Perma-Nest Plant Trays

See how they nest for easy handling and storage. Favored by the experts, endorsed by 5 leading gardening magazines, tested and purchased by over 60 Gov't and University Botanicals. Never rot, rust or corrode. No soggy pores to harbour bacteria, and instantly washable to their original shatterproof polystyrene lustre. One Perma-Nest outlasts 10 wood flats with many other bonus advantages.

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22 X 11 X 2¾" — 2 for $3.50 • 4 for $6.95 • 6 for $9.25
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Combination Offer — One of each 4 sizes above — $2.95

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2 ft. long x 1 ft. wide x 3" deep

Designed to give slips and seedlings a consistent, adequate supply of moisture. Eliminates the danger of washing slips and seedlings away by surface watering. Develops strong roots because they reach down to tap the wick-fed source. Asbestos fibre glass wicks never clog or rot. No mess or leakage. Very attractive. Watch your seedlings and slips thrive right in your own living room.

Complete Moist-Rite Wick-Fed Kit as pictured, with brass stand, 2-pint reservoir, wicks installed and 2 ft. x 1 ft. x 3" tray..... $4.25

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HORTICULTURE

America's Authentic Garden Magazine

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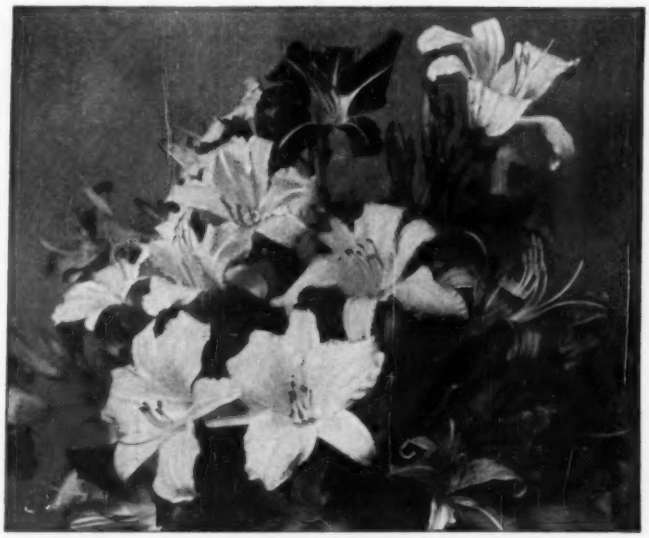

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BAGDAD. Dormant (Stout). **BROWN RED.** Ht. 4'. Mid-season.
BELLE OF GEORGIA. Dormant (Russell). **PEACH.** 4" bloom. Ht. 3'. Early.
BESS BUCHANAN. Dormant (Russell). **GOLDEN BUFF.** Rose veins. 5" Ruffled bloom. Ht. 3'. Early.
BOUTONNIERE. Dormant (Stout). **ORANGE-PEACH.** Ht. 3'. Mid-season.
BREEZE. Evergreen (Russell). **OLD ROSE.** Green throat. Rounded 4" bloom. Ht. 2'. Mid-season.
ENCORE. E. (Russell). **TOMATO-RED.** 4½" bloom. Ht. 2½'. Mid-season.
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RED TOKEN. Dormant (Russell). **MAHOGANY RED.** Purple eye. Ht. 2½'. Mid.
ROSE OF TEXAS. Dormant (Russell). **ROSY RED.** 5" flower. Ht. 3'. Early.
RUSSELL'S MINUET. D. (Russ.). **ROSE AND YELLOW.** 4½" bloom. Ht. 20". Mid.
SKYLARK. D. (Russell). **LEMON.** Thick texture. 4½" bloom. Ht. 4'. Mid-season.
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BLACK PRINCE. Dormant (Russell). **DARK RED.** Keeps well. Ht. 3½'. Mid-season.
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MRS. B. F. BONNER. Evergreen (Russell). **PALE LEMON.** Stays open late. Ht. 2½'. Early.
MUSICAL ECHOES. Semi-Ever. (Russell). **BROWN.** Deep rose eye. Ht. 2'. June-July.
PATSY. Dormant (Russell). **RED.** Darker eye zone. Ht. 2½'. Mid-season.
TEXCAPADE. Dormant (Russell). **ROSE-RED.** 4" flower. Ht. 18". Early and Mid-season.

GROUP C—*$2.25 ea.—Any 4 for $7.50*

HEARTCROSS. Dormant (Russell). **CORAL-PINK.** Fast grower. 6" bloom. Ht. 3'. Early.
HERBERT MORGAN. Evergreen (Russell). **YELLOW.** Ruffled recurved petals. Ht. 2½'. Mid-season.
MISS NAN. Semi-Ever (Russell). **LEMON.** 7" flower. Ht. 3'. Mid-season.
SAM MOBLEY. Dormant (Russell). **RED.** Gold throat. 5" bloom. Ht. 2'. Mid-season.
SUN DROPS. Dormant (Russell). **YELLOW.** 4" bloom. Ht. 20". Very Late.
THE HEIRESS. Dormant (Russell). **WINE.** Gold overlay. 4" bloom. Ht. 3'. Early.

YOUR CHOICE FREE—*Select one plant with each $7.50 group—Each of these varieties a current $3.00 value.*

COLLECTOR'S ITEM. Evergreen (Russell). **RED.** Huge rich tomato-red. Mid-season.
JEWEL RUSSELL. Evergreen (Russell). **LEMON.** Ruffled 8" bloom. Ht. 3'. Mid-season.
JOE HOUSE. Semi-Ever. (Russell). **PINK.** Apple green throat. Ht. 3½'. Mid-season.
MURRAY RUSSELL. Dormant (Russell). **VELVETY RED.** Much sought after **JUNIOR CITATION WINNER.** Profuse bloomer. Ht. 2½'. May-June.

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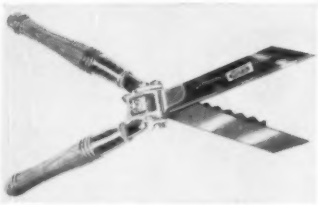

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The two groups of Earliana tomato seedlings above were started at the same time, on September 9, 1956, and photographed one month later, on October 8, 1956. The Dept. of Botany, Drew University, Madison, N. J. made the tests and took this unretouched photograph.

Note vigor, size and perfect stand of the Fertl-Cube plants, as contrasted with the smaller, less vigorous, spotty stand in good garden soil. Damping-off (a fungus disease common in soil) has taken its toll of the seedlings to the right. *Damping-off cannot occur with Fertl-Cubes,* because only clean, natural materials free from harmful organisms are used in their composition.

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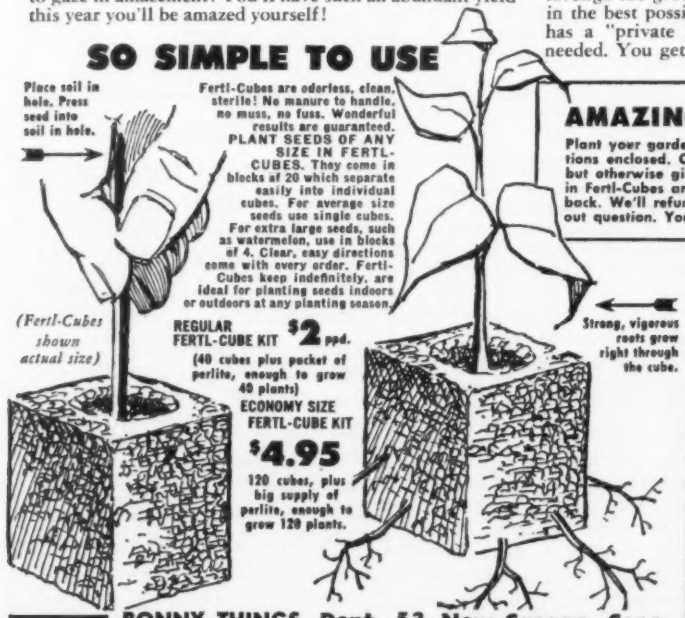

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READERS' QUESTIONS ANSWERED

We have recently moved into a new home and want to put in some trees, shrubs, evergreens and roses this spring. How can we be certain the soil is suitable for planting?

The only way is to have the soil tested. As soon as the ground thaws, dig down eight to 12 inches and take out a half pint of soil from each section you intend to plant. Label and keep each separate and state on each the plants you want to grow. Then mail samples to your state's Agricultural Experiment Station for analysis. Important, too, in growing plants is soil structure and good drainage. Notice especially whether water drains off or remains in particular spots.

☆ ☆ ☆

How often should lime be applied to the garden and what is the best time to do it?

Unless you are certain that the soil needs lime, it is advisable to send samples to your state Agricultural Experiment Station for testing. Generally, an application every four to five years is sufficient to sweeten the soil and keep it around neutral. Early spring is an ideal time to apply lime because spring rains will wash it in. At that time, use the fast acting hydrated lime. If making applications in the fall, another excellent time to do it, use the slower acting agricultural lime. Always avoid the use of lime around rhododendrons, azaleas, mountain laurel, heaths and heathers and other acid loving plants.

☆ ☆ ☆

What is the right time to apply a dormant oil spray on shade trees and evergreens to kill aphids, scale and other overwintering insects? What is the danger of spraying when the temperature is too low?

The time to apply a dormant spray is in the late winter or very early spring just as the buds are ready to break. Choose a day when the temperature is between 40 and 65 degrees F. and is likely to remain in that bracket for 24 hours. Applied at colder or warmer temperatures, the oil may become separated and burn the plants. Other steps to follow include: apply spray early in the day to allow it to dry by night; avoid spraying after the buds have broken and leaves are one fourth inch long; spray only once during the same season, preferably in spring. Furthermore, do not use a dormant oil spray on such thin-barked trees as magnolia, beech, butternut, black walnut, sugar or Japanese maples and on false-cypress, Douglas fir, hemlock and yews among the evergreens. Lime-sulphur is another material that can be used as a dormant spray, though it stains painted surfaces. When using either the oil or lime-sulphur follow carefully the directions given by the manufacturer.

☆ ☆ ☆

Why do I have such poor luck with hyacinth bulbs forced in water? Roots develop without the proper top growth.

Success with hyacinths grown in pebbles or in hyacinth jars in water comes to a large extent from large, healthy, firm bulbs, particularly those recommended for forcing. Improperly cured bulbs will not grow normally, no matter how carefully they are handled. Then the most important step in their culture is a rooting period of several weeks in a cool place, at 55° F. or less. Even after roots have developed, keep the bulbs in a dark place until tops are four to five inches tall before bringing to warmth. Placed in the bright light or sunshine the foliage will take on a normal green coloring in a few days. When flower buds fail to shoot upward, try placing inverted cones, with a hole at the top for light to enter, over the bulbs to draw them up. Hyacinths take 9-10 weeks to develop proper roots, so do not try rushing them. After roots become a few inches long, keep the water level a quarter of an inch below the base of the bulbs.

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Boston, Mass.	Mar. 10-16
Inglewood, Calif.	Mar. 16-24
Houston, Tex.	Mar. 17-24
Chicago, Ill.	Mar. 23-31
Detroit, Mich.	Mar. 23-31
Pittsburgh, Pa.	Mar. 24-Apr. 21
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You Can Buy with Confidence

THIS IS THE SEASON when gardeners look forward with keen anticipation to the arrival of new seed and nursery catalogs, folders and brochures which will guide them in making their selections for 1957. For generations these "dream books," as the brilliantly colored catalogs are often called, have been a source of inspiration to those who garden.

In fact, it is not too much to say that the names of many leading nurserymen and seedsmen have become by-words to gardeners throughout the country. Moreover, satisfied customers of these nationally-known firms have implicit faith in the quality of the seeds, plants and bulbs offered on every page.

It is somewhat disheartening to realize that the number of lavishly illustrated catalogs is dwindling. In spite of this trend, new gardeners are eagerly seeking sources for new and improved varieties to grow and enjoy in their gardens.

Also, there are hundreds of thousands of home owners throughout the country who find it easy and convenient to satisfy their garden needs by ordering from catalogs. In many cases, specialists who feature rare and unusual plants, as well as special strains of popular kinds, provide the only sources of supply. These firms, which are eager to serve their customers, are filling a vital need for the advancement of gardening.

Within the past few years, a new kind of competition has arisen in the horticultural mail-order field. Individuals with little or no experience in the growing of plants, and less knowledge of the plants themselves, have set up businesses. They use sensational methods to publicize their products.

In many instances, the claims made are anything but true. Often fanciful names are coined for plants that have long been known in the trade. Sometimes uncommon species and varieties are featured under the guise of being new and glowing pictures are painted of the performance of these plants. Moreover, they are described as easy to grow with little or no care. Prices range from moderate to exorbitant. To top all this, the material supplied is often far below standard.

THE SHIELD OF QUALITY
N.M.O. NATIONAL MAIL ORDER NURSERYMEN'S ASS'N. N.A.

Experienced gardeners, aware of these unscrupulous practices, have shied away from these sources, though many beginners have been "taken in." As a result they have become discouraged.

The American Association of Nurserymen and the National Mail Order Nurserymen's Association, aware of these unscrupulous practices consulted the Federal Trade Commission. As a result of close cooperation between these various agencies, a set of trade practice rules for the nursery industry was promulgated on June 27, 1956.

These rules were established for the maintenance of free and fair competition in the entire field. However, it is not in point to publish here the twenty-one rules drawn up for the betterment of the trade.

The National Mail Order Nurserymen's Association has devised an insignia to indicate their conformance to ethical trade practices. Obviously the members of this organization will work together to protect and enforce these principles. In this way they are rendering invaluable service to the ever increasing gardening public. Now gardeners can buy with confidence from nurserymen who display the insignia which appears on this page.

Does YOUR Car Get "Shameful Dirty"?

EVERY TIME YOU WASH IT DOES IT RAIN CATS AND DOGS?

EASTERN GRIME,
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A. E. Worsfold

CALIFORNIA: "I have used the KOZAK on my 1949 Studebaker since I purchased it 3½ years ago. The car still looks new after 47,000 miles. Your KOZAK is all you claim for it."
Stafford W. Bixby

COLORADO: "A friend asked me today what I did to my car to keep it looking so nice all the time. So I told him about the KOZAK and he asked me to get the one I am ordering for him now."
Arthur Brandt

CONNECTICUT: "I have used the KOZAK Auto DryWash Cloth for a good many years and have always found it to be all you advertised and more."
Royal W. Wilson

DELAWARE: "We are steady users of your KOZAK Cloths, both for cars and furniture, and we swear by them! I want three more for my family."
Mrs. W. V. Sipple, Jr.

FLORIDA: "Send me three KOZAKS. I am here for the winter and can't get along without the KOZAK, as I use it all the time at home. Nothing like it!"
Lewis S. Milner

GEORGIA: "The KOZAK is really a wonder. I enjoy using it." W. H. Davis

INDIANA: "I was a doubting Thomas when I read your letter describing the dry-wash method. I took a chance and ordered one KOZAK. I am amazed at the results. Your statements are not the least bit out of line with actual facts."
F. L. Wiatrowski

IDAHO: "I am sending you an order for a new supply of KOZAKS. A few days ago when I stopped at the garage where I bought my car (a 1950 Dodge) the proprietor said: 'How do you keep your car so bright in this dust? I wash mine about twice a week, but yours is always clean, looking just like it came out of a band-box!' I told him I use a KOZAK Cloth on it! It takes me about ten minutes to go over my car."
Don Martin

ILLINOIS: "I really got more than I expected in the KozaK. I was amazed the way they cleaned my car after 30 days dirt. I would call the KOZAK the magic cloth."
Arthur Higgins

IOWA: "We have a new shoal green Cadillac and KOZAK makes it very easy to keep looking new."
E. D. DeMoss

KENTUCKY: "Enclosed check for a KOZAK Cloth. Have used one for several years and think it is wonderful."
Mrs. S. S. Yantis

LOUISIANA: "The KOZAKS are surely fine. I will not be without them as long as I have a car." A. M. Trudeau

MAINE: "Send me two more of your KOZAK Cloths. I have used one KOZAK all winter on my car and have not had to wet-wash it once. I am sold."
Theodore Wood

MARYLAND: "I am a private chauffeur. I take care of five cars. I am still using the KOZAK Cloth I got from you, and it is just wonderful."
J. Whittington

MISSOURI: "Have used them for several years on all our Funeral Automobiles. All you advertise them to be, do not want to be without them."
Merle Shepard

NEW JERSEY: "I have been using the KOZAK for the past six months, and I am amazed at the very fine condition it has kept my car in. Dirt vanishes and the car is as brilliant and shiny as new. Send me three more KOZAKS."
H. H. Furber

NEBRASKA: "I would not be without the KOZAK. With very little effort I am able to keep my car clean and new-looking at all times, and have eliminated many costly wet-wash jobs. Please send me five more as soon as possible."
Edward G. Erlewine

NORTH CAROLINA: "Never saw anything to equal the KOZAK for an automobile. My car hasn't had a water-wash in six months, and looks better. Here's check for another KOZAK."
C. R. Ricker

OHIO: "I highly recommend your KOZAK Cloth. It has kept my 1951 Plymouth looking clean and new all the time, to say nothing of the money saved in not having the car washed."
Mrs. Jessie W. Friedmann

PENNSYLVANIA: "I have been using your KOZAK Cloth for about ten years. My 1948 car has been water-washed twice in that time and then only when it was Simonized. Many people ask me if I had my car painted."
E. A. Puderbaugh

UTAH: "I have used your KOZAK Cloths for my cars for the past 15 years. They have given me entire satisfaction. Everybody admires my car. I inform them that KOZAK Auto Dry-Wash does the trick. I can recommend them highly."
A. D. Sargent

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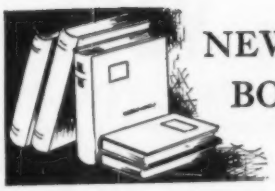

NEW BOOKS

Books reviewed on this page may be ordered from Horticulture's Book Dept., 300 Mass. Avenue, Boston 15, Mass.

On Flower Growing

GROWING FLOWERS. By John H. Tobe. *George J. McLeod, Ltd., Toronto, Canada. 367 pp. $5.00.*

More than 400 separate subjects are discussed in this book. Some get only a paragraph while others are given a page and a half. Altogether they constitute a horticultural melange, such as is seldom seen in print. Although there is no continuity nor index, there is a table of contents, which covers nine pages. A great deal of useful gardening information will be found in all this material, along with humorous comments and some sage advice.

About Daffodils and Tulips

THE DAFFODIL AND TULIP YEAR BOOK. *The Royal Horticultural Society, London, Eng. 150 pp. $1.65.*

The 1957 Daffodil and Tulip Year Book of the Royal Horticultural Society is dedicated to Guy L. Wilson, a bulb growing expert, who is well known in this country. He was present at the first conference of the American Daffodil Society in Washington last year and writes about it at length in this Year Book. Among the articles in this informative year book is one dealing with daffodil seedlings in Oregon as well as an intriguing discussion on the use of tulips in flower arrangements, with charming illustrations.

Handy and Practical

HANDBOOK ON BROAD-LEAVED EVERGREENS. *Brooklyn Botanic Garden, Brooklyn, N. Y. $1.00.*

Home gardeners all over the country will find this well-illustrated handbook on the popular subject of broad-leaved evergreens helpful and useful because it covers the various sections of our great land. Well known horticulturists have written the contributions on such phases as "Broad-leaved Evergreens in the Middle West", "Broad-leaved Evergreens in the South", "Hollies for Eastern Gardens", "Propagation of Broad-leaved Evergreens" and "Winter-tolerant Camellias". Since every garden, no matter how small, usually has a few of these year-round plants, home gardeners will find this handbook of assistance in deciding what to plant, how to care for it and how to combat ills and ailments.

Leaves of miniature caladium are green with large splotches of white

Miniature Caladium

SPECTACULAR foliage plants like this miniature caladium (*C. humboldti*) offer spice and variety for window gardens. A graceful little plant, it rarely grows more than ten inches high. The bright green leaves, heavily splashed with pure white, are from three to four inches in length.

It combines effectively with any grouping of plants which tolerate part shade, such as begonias, African violets and gloxinias. Last summer I found a most attractive bed using this caladium with oxalis. The well-known pink-flowered, tuberous rooted oxalis (*Oxalis crassipes*) was bedded along the north wall of the house with *Caladium humboldti* placed at random as an accent. The effect was striking.

Using this same idea, I placed my miniature caladiums in my window garden, in an east window, surrounded by winter-flowering *Oxalis regnalli*, Bermuda buttercup (*O. cernua*) and *O. crassipes*. The caladium lasted well into the winter, while the oxalis flowered profusely in one of the most colorful window settings that I have ever had.

Under a fluorescent light unit, the miniature caladium grew beautifully alongside gloxinias, African violets, episcias and begonias. Imagine the beauty of a red-flowering gloxinia in full bloom with the graceful, shiny green and white leaves of this small caladium!

Caladium tubers are started in a warm temperature, between 80-85 degrees F. For the large-leaved varieties, which are usually grown outside in

Please turn to next page

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2-yr., S., 3 to 6 ins.	$5.00	$25.00
3-yr., S., 8 to 14 ins.	8.00	40.00
● COLORADO BLUE SPRUCE		
3-yr., S., 5 to 10 ins.	$10.00	$ 50.00
4-yr., T., 6 to 10 ins.	25.00	125.00
● DOUGLAS FIR—Hardy		
2-yr., S., 4 to 6 ins.	$ 5.00	$30.00
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New SHRUB ROSE *Flamingo*

New SHRUB ROSE, *Flamingo*

Delightful, new, all-summer, flowering shrub-rose that will add brilliant color to foundation planting and in the shrub border. This nice, shrub-like plant has excellent foliage and produces large, pink, cup-shaped flowers in abundance throughout the entire summer. Excellent in localities where temperatures go quite low. Survives where other varieties fail.

DEUTZIA

Kalmiaeflora

DEUTZIA, *Kalmiaeflora*

A very showy flowering shrub of easy culture and bushy habit. In May and June, its slender and gracefully arched branches are completely hidden under a blanket of lovely, frilled, Kalmia-like, soft pink flowers. Perfect for small gardens since it never grows over 3 ft. in height.

New FORSYTHIA

Beatrix Farrand

New FORSYTHIA, Beatrix Farrand

Spectacular new Forsythia originated at the Arnold Arboretum by Dr. Karl Sax and named in honor of Mrs. Beatrix Farrand, one of America's foremost women landscape architects. It is an extremely vigorous grower, making a large symmetrical bush 6′ to 8′ tall. Deep, golden yellow florets of immense size (over 2″ in diameter) have striking orange markings in the throat. Be sure to see this gorgeous new variety as well as Lynwood Gold and Spring Glory in our new catalog. We consider them the 3 best Forsythias in cultivation today.

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Wayside Gardens

81 MENTOR AVE. MENTOR, OHIO

Miniature Caladium

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summer, the directions would be different. However *C. humboldti,* being somewhat rare, deserves some special treatment. Plant tubers in a five-inch pot in a soil mixture composed of three parts leafmold, one part loam and one part sand. If you do not have these ingredients, any commercial mixture that grows good gloxinias and African violets, will also grow this caladium.

Plants require bright light, but direct sun for any length of time is likely to burn the leaves. They thrive in a warm moist location. If your window garden does not already benefit from abundant humidity, obtain a galvanized metal tray. Place sand or pebbles in this tray, and keep either moist at all times. Set your flower pots on this and your plants will have a much healthier atmosphere.

When ready for a rest, leaves will begin to turn yellow. At this point, withhold water until all the leaves are withered, and place the pot in a cool, dark place. Then, periodically, pour a little water in the pot so the tuber does not become dry enough to shrivel. When little green spears begin to come through the soil, repot and move to your window garden.

Leaves with a scorched appearance are an indication that plants are receiving too much light. Leggy plants with long stems, however, are evidence that more light is needed. The period of dormancy for my plants of *C. humboldti* runs from January 15 until April 15. During most of the rest of the year, they are ideal window garden plants.

—Elvin McDonald
Gray, Oklahoma

Latest on Lilies

Lily Year Book. *The Royal Horticultural Society, London, Eng. 149 pp. $1.65.*

The 1957 Year Book of the Royal Horticultural Society has a much wider appeal than most similar publications. American lily growers may well feel justified in spending the small amount a copy costs, for such articles as "Lilies for the Rock Garden", "California Lilies" and "Raising Lilies from Seed" make the book worthwhile. Notes on the history of the Easter lily are followed by an account of the rise and fall of the Easter Lily industry in Bermuda, including an account of the remarkable work done by H. E. D. Smith in developing *L. longliflorum howardi.* This is the lily now being shipped in quantity to the U.S. as cut flowers, the lily for which a gold medal was awarded at a British Empire exhibition in Wembley. Many excellent illustrations are included in this volume.

Aristocrats Among Flowering Shrubs

Dr. Clement G. Bowers, Author of "Winter Hardy Azaleas and Rhododendrons"

OF ALL THE FLOWERS which have been created, there are none finer than those which may be found among azaleas and rhododendrons. A florist's plant of distinction, a garden flower of excellence and a superb, woody, landscape plant of aristocratic significance, this genus, known botanically as *Rhododendron,* contains plants which would do credit to any occasion anywhere.

As if this combination of floral virtues were not enough, some of the species within this group of plants go still further and distinguish themselves by bearing evergreen leaves. And yet they are plants of the temperate zone, some natives of sub-zero climes. "Broad-leaved evergreens" they are called, to make a distinction between such as these and the distinctly different "evergreens" which have needle-like leaves.

Noteworthy Plants

These noteworthy plants are becoming more and more useful as time goes on. We keep learning about their requirements. We are rapidly extending their usefulness through the discovery of new species and the production of new hybrids, and we are increasing their range of adaptability. A group of plants formerly regarded as something special and not for the multitude, they are gradually becoming plants for gardeners everywhere, within certain geographic limitations.

Rhododendrons and azaleas are so closely related that all are regarded by botanists as members of the genus *Rhododendron.* The commoner species of azalea are mainly deciduous when grown in the north, while most of the common rhododendrons are broad-leaved evergreens. We can regard them all as merely different kinds of rhododendron.

These plants constitute a part of a very large plant family called the heaths, or *Ericaceae.* This is a remarkable and distinctive group of plants, having common characteristics, the most important being their fondness for acid soil. In this family are included the mountain laurel (*Kalmia*), the blueberries (*Vaccinium*), the trailing arbutus (*Epigaea*), the heathers (*Erica* and *Calluna*), the Labrador tea (*Ledum*), the wintergreen (*Gaultheria*), the *Enkianthus,* the andromeda (*Pieris*), *Leucothoe,* and a host of less familiar kinds, mostly plants of the woodlands, the wastelands and the wild. Many of these will thrive under conditions suitable for rhododendrons.

Not only is this family a large one, but there are many different kinds of plants even among the rhododendrons. A dozen or so azaleas and perhaps an equal number of "true" rhododendrons were about all the species known in Europe and America up to 100 years ago. Then explorers began finding vast quantities of new forms in the inner fastnesses of the Himalayas and elsewhere in Asia, so that now their number is legion.

Although not even a single species was native to England, its island climate proved strikingly congenial to these new Asiatic species, so that a number of distinctive kinds were grown there at an early date and hybrids were produced. When these were tried in Eastern America, however, the climate proved unsuitable for most of them. The tender azaleas ultimately found good homes in our southeast regions, but the exotic rhododendrons which, toward the turn of the 20th century, were coming into great prominence abroad, failed when tried here, except on our west coast.

Over the years, successive explorations in Western China, Burma and elsewhere yielded hundreds of plants described as new species, which were readily grown in Britain where great interest was shown and an important rhododendron cult grew up. To lesser extent, too, they were introduced into Holland, Belgium and Germany.

In New England, on the other hand, and to some extent at New York and Philadelphia, the situation, up to 1925, was aptly summarized by the late E. H. Wilson. He said that nearly all of the new discoveries had been tried at the Arnold Arboretum and that all the evergreen sorts from Asia, except an insignificant little species from Manchuria (*Rhododendron micranthum*), had proved unhardy there.

Meanwhile, gardeners in the northeast were left with nothing newer to grow than the hybrid rhododendrons of the 1880's. By now, these were considered obsolete abroad, but still constituted our main stock of available evergreen rhododendrons for cold regions. The experience of eastern growers, therefore, mainly paralleled that of the Arboretum.

Attractive, hardy species and hybrids appeared, however, among the azaleas. One of the Arnold Arboretum's greatest introductions was *R. kaempferi,* the beautiful Japanese azalea which will bloom prolifically and endure winter cold to about 15 degrees below zero. The Ghent hybrids, also, being descended largely from American species, were splendid subjects for many northern gardens. These were augmented by the Mollis group from China and Japan, plus new discoveries on this continent, such as *R. vaseyi.*

Rigid Tests

It was apparently the policy of Professor Sargent, and others directing the Arnold Arboretum, to make honest outdoor trials of the new species which came to their hands, without coddling or compromise. The surviving plants, therefore, represented material that could be accepted by the public as genuinely hardy and worthy of growing in northern gardens.

It was only in the hands of private growers, located in especially favorable sites, that success with the newer rhododendrons was eventually reported. One of the first persons in the New York-New England region to break down the barriers and demonstrate that something other than American rhododendrons and their hybrids could be grown in zero temperatures was the late Charles O. Dexter. At Sandwich, Massachusetts, this rhododendron enthusiast began raising quantities of seedlings from a few plants of the Fortunei series which had proved amenable to Cape Cod weather.

Beginning in the early 1920's, Mr. Dexter crossed his plants with one another, then with other species and hybrid variants which he had raised

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OUR FRONT COVER *features a group of azaleas in the garden of William Gotelli, South Orange, New Jersey. In addition to such old favorites as Coral Bells, the collection contains Glenn Dale and Beltsville hybrids. Among them are: Jubilant, a rich purplish-red; Guy Yerkes, salmon-pink; Usuyo, orchid purple with a reddish blotch, and White Perfection.*

in this volume.

A velvety, smooth-textured lawn can be a crowning achievement for any home owner who follows the basic principles of lawn making. Thorough preparation of the soil, feeding and selection of a seed mixture suited to individual needs are essential.

There Is a Difference in Grass Seed

Dr. Robert W. Schery, Director, Lawn Institute

THE HANDY MAN, who checks the new parts of a new motor and the housewife, who seeks details about a stove and washer, will often specify merely "grass seed" when it comes to the lawn. Yet, the most careful soil preparation or the best of fertilizers—to say nothing of rosy hopes and expectations—can be sacrificed if the right seed is not chosen for the particular situation.

A lawn is neither a hayfield nor crop land. Coarse grasses are not wanted, nor are annual grains. What is needed is a permanent perennial carpet, fine-textured and sod-forming, able to survive under local conditions. A lawn should be seeded the right way, at the proper time, above all, with the right grass.

Quality in seed mixtures involves both quality of composition and quality of content. First and foremost, are the *right kinds* of grasses included and are they in sufficient quantity? Second, are the seeds of the various species clean and full-bodied or are they light, chaffy and perhaps weedy?

Fortunately, seed laws and the ethics of the trade protect the consumer. Seed must be tested for viability every nine months. It is restricted as to weed content (and type of weeds) by state law. Most states require information about these matters on the seed package, though you may have to look at the fine print. "Purity"—the percentage of good seed distinct from chaff and dirt—is the basis for trading, and reputable brands always contain adequately clean seed.

Unless grass seed has been seriously mishandled, soaked or stored at high temperatures, you can assume that it will be reasonably pure, weed-free and capable of sprouting. Composition or make-up is a different matter. There are, of course, honest differences of opinion as to what ingredients should go into a mixture, and in what proportions. All too often, cheap mixtures

Study of grass seed under a lens tells the story. Large seeds are those like domestic rye, while small seeds are the desirable blue grasses.

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are inadequate, because they contain certain species like domestic rye grass, which though comparatively inexpensive are also impermanent.

Most "cheap seed" is in reality expensive. For example, there are over two million blue grass seeds to the pound, but only 250,000 of rye grass. Hence, plant for plant, blue grass is cheaper, and it provides the "added features" of greater permanency, plus the ability to spread by underground stems.

Not long ago, Dr. Fergus of the University of Kentucky was asked by the joint committee of the Agronomy Society and the American Seed Trade to study the make-up of lawn mixtures on the market. Joint surveys were made of what the experts (experienced turf men and experiment stations) recommended and what seedsmen actually offered for sale in the same area.

The discrepancies were considerable for all regions of the country. Where the average of all expert opinion called for 88% basic grasses, the average of all mixtures showed only 38% basic grass. Basic grasses may be defined as permanent perennial types of proven worth for lawns, namely Kentucky blue grass, bent grass, fine-leaved fescues and rough blue grass.

Cheap Mixtures Contain Rye

A similar survey by Drs. Bass and Lantz in Iowa showed similar results. There were a number of high quality mixtures on the seed store shelves, but the average was low, due to an equally high proportion of cheap mixtures based largely on rye grass. Surprisingly enough, this survey was made in the heart of the western blue grass district, where, if anywhere, Kentucky blue grass will thrive and by itself make the best of lawns.

What then can the seed purchaser do until vendors of poorer quality mixtures are persuaded to upgrade their product? Primarily, do not buy by price alone. Get acquainted with the permanent grasses for your area and look on the packages for the statement of content.

North of Tennessee it should read high in the basic grasses—Kentucky blue grass (including Delta, Arboretum, Park, Merion and others), red fescues (including Chewings, creeping red, Illahee and Pennlawn), colonial bent grasses (including Astoria, Highland and Rhode Island) and rough blue grass (*Poa trivialis*). There should be very little or no rye grass (especially domestic or Italian—perennial is better, though scarcely a quality lawn grass), redtop, meadow fescue, timothy, orchard grass or similar "hay grasses."

This lawn of coarse grasses containing a high percentage of weeds, the result of purchasing an inexpensive mixture of grass seed, has little to recommend it.

In climates from Tennessee southward, the situation is somewhat different. Seeding is resorted to less frequently than the planting of live stems or plugs. Where practices involve a summer grass-winter grass system, Bermuda grass is generally seeded in the spring for the hot summer weather and rye grass in autumn for the cooler months. Neither is expected to persist, as perennial grasses are in the north, so that the rye grass, objected to in the north, is appropriate in the south.

In the upper south and middle latitudes (northern Alabama to the Ohio Valley) a good case can be made for high Kentucky 31 content or its parent Alta fescue. Few northern-style grasses, which remain green through winter, are as rugged for hot, dry summers. The species is too coarse to make high class close-up lawns. Yet, planted thickly enough to force upright growth (five pounds or more per 1000 square feet), it is acceptable in that climatic no-man's-land, where neither northern grass nor southern species find conditions entirely agreeable.

Even in the north, Kentucky 31 fescue finds use in athletic fields or play areas, where coarseness offers little objection. Usually it is mixed with Kentucky blue grass to provide a companion grass that spreads by underground stems to fill in scars made in play.

For quality lawns north of the Ohio Valley three species carry most of the burden. A fourth, rough blue grass, is a specialty type thriving especially in damp, shady locations. Clover is a matter of preference, although the trend is toward clover-free lawns, "unblemished" by splotches of differing texture.

Kentucky blue grass is the mainstay of mixtures. Or it can be used alone. Growing best on clay and loamy soils where reasonable fertilization is practiced, it will persist in shade as far south as Florida, but prefers progressively more sun northward into Canada. Fine-textured, sod-forming, compatible, strongly recuperative, its only weaknesses are a tendency to summer dormancy and, in some strains and areas, susceptibility to disease.

Excellent companions for Kentucky blue grass are varieties of red fescue. These fine-textured types are noted for their ability to persist in poor soil and shade. They are especially useful on light, sandy soils, such as found in upper Michigan and Long Island, and in poor soil areas of the Atlantic coast and eastern mountains. In moist, fertile soils they suffer from disease and may become clumpy, so that they are best not used alone. As with Kentucky blue grass, red fescues do better if mown high, at least two inches in the southern part of their range, although they tolerate lower cutting northward.

Bent grasses at their best are among the most beautiful of turf grasses. Witness a well kept golf green. Yet their requirements in order to flourish are such that many experts prefer to use them alone or not at all. Other turf men prefer the tight, close growth they lend to a mixture and will chance certain troubles. Bent grass succeeds best where amply fed and watered. In contrast to blue grass and fescue it is adapted to low cutting, which must be practiced frequently.

Bents often grow in patches where conditions are favorable, blending imperfectly with their companions. Bent grass generally discolors sooner in winter than blue grass or fescue and "greens" a bit later in spring. It is unduly subject to browning from dis-

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Low-growing Shrubs Fill the Bill

LOW-GROWING SHRUBS have unlimited uses in present-day gardens. Our low-slung houses often need the softening effect of shrub masses which these plants provide. To be sure, there are many desirable dwarf evergreens which are adapted for year round interest, but we need flowering shrubs for the color and foliage texture which they provide. Those averaging three to four feet in height are especially in demand. Even shrubs which reach five to seven feet are easily pruned to keep them at the desired height.

Dwarf winged euonymus (shown opposite), with its neat, glossy leaves and rounded, symmetrical form, has long been popular in small home gardens. Adapted for formal uses because of its character, it is perhaps most cherished for the bright flaming red of its foliage in the fall of the year. At that time, it rivals the most colorful of trees and shrubs, whether planted as a foundation specimen or in informal groups around taller plants. Hardy and disease resistant, it is highly recommended as one of the most outstanding of small deciduous shrubs.

The Showy Quinces

Among the small flowering shrubs for early Spring color are the Japanese quinces. Growing ultimately to a height of five feet, they are easily maintained at three or four if desired. There are many notable new varieties, like Cardinalis, a double red, and Nivalis, a white. Give a sunny location and well-drained soil and prune after flowering is past.

The rose daphne, with its fragrant pink flowers in May, is only six inches tall, so it hardly can be classed as a shrub. A relative, growing three feet tall, is the February daphne, which flowers in April, with occasional fragrant florets appearing in February and March. Foliage appears after the flowers. A white flowering form is also desirable, with yellow berries instead of the red of the species.

The brooms have been climbing the ladder of popularity recently, and well they should, with their bright yellow pea blossoms in May. Perhaps the best known is the Scotch broom, four to six feet tall, with golden flowers. The Portuguese broom has white flowers and grows only a foot high. The showiest of the brooms is the Warminster broom, a hybrid, with creamy yellow flowers in profusion in mid-May. Give all brooms a sandy, well drained soil and full sunshine.

The slender deutzia has been in gardens a long while and will continue to be important among the small flowering shrubs because it grows easily in many kinds of soils and locations, producing white flowers in May. A graceful plant with arching branches, it remains only three feet.

Less common is the Alabama fothergilla, called also bottle brush, because of the shape of the flowers. Though it attains five or six feet, it is slow growing and is usually a three or four foot shrub, with large, insect-free leaves that turn bright scarlet in the fall. It does well in shade.

Versatile Kerria

In the yellow group there is kerria, with arching branches covered with small yellow flowers in early spring. It suckers and takes over a given area, so it has to be watched. It does well in shade, but the double form which stays in bloom longer is more attractive. Stems remain bright green all winter. There is always a certain amount of winterkill which must be cut out in the early Spring.

The golden St. Johnswort flowers in July, when few shrubs do. Single flowers two inches across continue over a long period. The height is three feet. Give a poor sandy soil and it will take care of itself. Another is the Kalm St. Johnswort, with smaller yellow flowers. It is very hardy.

The bush cinquefoil, four feet tall, has small deep yellow flowers an inch and a half across starting in May and continuing most of the Summer. It is among the hardiest of shrubs and will grow easily in sunny locations. Not especially attractive, it is nevertheless desirable for mid-Summer color.

Billowy when in flower, the Hills of Snow hydrangea comes forth with large white flower heads in late June and early July. Growing three feet tall, it tolerates shade, as well as seashore conditions. It tends to have much dead wood in the early Spring, but this is of no consequence, because it flowers on the new wood rather than on the old. It grows very easily.

The early Spring brings the delightful four foot flowering almond, in pink or white. Its branches are smothered with small rosette flowers after forsythia has passed, and thereafter the foliage is attractive. It needs sun and a well drained soil. It tends to get a blight which browns the foliage in the summer, but to control cut out badly infested portions and spray with a fungicide such as ferbam.

Many azaleas, too, are not too tall growing and have many uses, particularly where brilliant splashes of color are needed. One, with vivid red flowers, is the dwarf growing Hinodegeri. It is not too hardy and is not recommended much beyond the Boston area. The poukhanense azalea, able to withstand temperatures to 20 degrees below zero, flowers in mid-May, with large orchid flowers.

Many of the species of old-fashioned roses noted for their fragrance and delicate flowers, are also in this group of low growing shrubs. An old favorite is the Scotch rose, with pale yellow single roses among finely cut leaves. It flowers in early June. The French or gallica rose is an old favorite among those who have known it in gardens of long ago. Large single deep red flowers are intensely fragrant. Cultivated in Europe for centuries before having been brought to this country, it remains about four feet tall.

Decorative Leucothoe

Drooping leucothoe is an evergreen shrub, three to four feet, with waxy, fragrant bell flowers along the arching branches in late April and May. The leaves are three to six inches long, shiny, dark green and leathery, turning bronze in the Winter. Leucothoe will grow in shade and because of its low height, makes a good plant to face taller growing shrubs. It is also used freely in combination with rhododendrons, azaleas, mountain laurel and other broad-leaved evergreens.

Viburnums are primarily large growing shrubs, but the sweet smelling Mayflower Viburnum remains at about five feet. Pink flower buds open to white flowers, which are much admired for their forms, as well as fragrance. Since it is susceptible to a graft disease, an improved hybrid, burkwood viburnum is superior. It has glossy leaves and is more upright in form. The fragrant snowball (illustrated opposite), one of the newer forms, is especially noteworthy.

Some spireas are small, such as An-

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Dwarf winged euonymus (Euonymus alatus compactus)

WHEN selecting flowering shrubs, choose them as you would furniture for a room. While most are noted for their distinctive bloom, some are also outstanding for their autumn color, like the dwarf winged euonymus shown opposite. Others are valued for their foliage and form when in flower and throughout the season, like the fragrant snowball illustrated below. On the other hand, low growing shrubs such as the bluebeard on this page, are valued for their late summer bloom.

Fragrant snowball (Viburnum carlcephalum)

Bluebeard (Caryopteris, Heavenly Blue)

Pink flowering dogwood (Cornus florida rubra)

Carmine crabapple (Malus atrosanguinea)

Redbud or Judas-tree (Cercis canadensis)

Golden-chain tree (Laburnum watereri)

Bluebeard (Caryopteris, Heavenly Blue)

Small Trees for Today's Gardens

Dr. Donald Wyman, Arnold Arboretum

THE HOME OWNER with a small garden and a contemporary house has an opportunity to use many kinds of low-growing trees. Tall, towering elms, horse chestnuts and sugar maples, now out of fashion, need no longer be used, since enterprising nurserymen stock a long list of trees, under 35 feet in height at maturity.

Some kinds of small trees are valued merely for shade, while others have attractive flowers and fruits in the spring and fall. Yet others have brilliant autumn color, serving as desirable ornamentals for more than one season.

Among the small trees, some are narrow in habit, while others are round and mound-like. At the same time, some do best at the seashore, while others need a protected place in which to thrive. All can be used to advantage to provide interest at advantageous points. Certain kinds, however, are more suitable for special situations.

The trees I have selected to discuss will seldom grow over 30 feet tall. Many "mature" when under 20 feet in height. Obviously, trees of this proportion are useful on the small property because they are more in scale with the house, lot and garden than larger kinds. Likewise, they are much easier to spray and prune. Their smaller height does not indicate slower growth, although it is true that not many trees grow as fast as an elm that is planted in good soil.

The size of tree to purchase generally depends on two factors, namely, cost and rate of growth. Houses in newly developed areas have an unfinished appearance without suitable trees on the ground. In such cases, it is wise to buy the largest size available.

If, however, rapid growth is not desirable, a six to eight foot tree is certainly less expensive. Additional time and money can be put into digging the right kind of hole, with good soil and mulch for the roots. Sometimes, smaller trees, carefully planted at the start, will eventually overtake similar, larger trees that were not carefully moved and cared for at planting time.

Where to place the tree on the grounds demands careful consideration. First, however, a knowledge of mature size is essential. Also, pay particular attention to the kind of tree, whether it is to be valued for its flowers, fruits or shade. In addition, consider if it is needed to hide an unsightly view or to shade the living room. This same careful thought is also needed to select the proper kind.

Among the best flowering trees for small gardens, especially noteworthy is the flowering dogwood (*Cornus florida*). A native American tree that is widely used, it is one of the few that has year-round appeal. In the spring, its large white or pink bracts, which look like petals, are strikingly familiar in gardens from Florida to Maine and west to the Mississippi River. The pink-flowering form is shown opposite.

As late summer approaches, the berries begin to turn a bright red. A variety with yellow fruits, though little known, is also handsome. Later in the fall, as the days grow colder, the foliage of the flowering dogwood becomes bright scarlet, and after the leaves and fruits have fallen, the characteristic horizontal branching habit of this small tree is a prominent feature in the winter picture. Flowering dogwood grows in any good soil, and although it may suffer from trunk canker in some localities, it holds a distinctive position in this listing of small trees.

Another small flowering tree (illustrated opposite) native to the same section of the country as the dogwood and flowering at the same time, is the native red bud or Judas tree (*Cercis can-*

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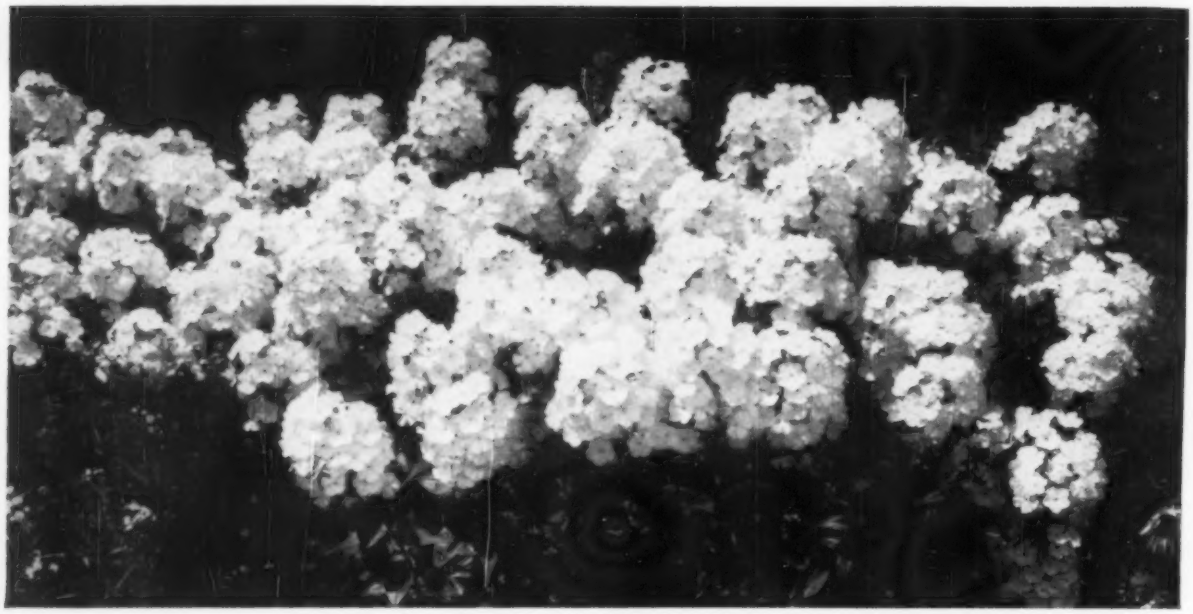
Flowering dogwood is one of the best small flowering trees

Many of the crab-apple varieties have year-round appeal



The new varieties of summer-flowering, hardy phlox are noted for their immense flower heads and clear colors.

Perennials Worth Considering

Roderick W. Cumming, Bristol, Connecticut

WHEN WE CONSIDER the vast number of perennials that can be grown in American gardens, it is surprising how few new hybrids, forms and varieties are appearing these days.

For one, increased production and shipping costs are a vital factor. Then, too, the demand is primarily for rugged plants that will thrive with a minimum of care. Many nurserymen cannot offer some of the gems featured in days prior to World War II, because many of the unusual perennials are sought only by connoisseurs.

However, there are many notable perennials that have been in the trade for a number of years, though little attention has been given them. Now is a good time to get better acquainted with these plants and the new varieties as we plan our 1957 gardens.

As we follow the blooming cycle of hardy plants, we can consider first a sprightly new ajuga, *Ajuga pyramidalis*. This creeping plant bears spikes of half-hidden flowers in the early spring, and has refreshing foliage that makes an enduring plant throughout the season. Often referred to as bugleweed, ajuga is a vigorous grower which spreads rapidly in good soil, particularly in partial shade.

This new species, which seems to be content in summer shade, has not given evidence of spreading rapidly. In addition, the tubular blossoms of bright gentian blue stand forth boldly on 10 to 12 inch stems. Thus, flower spikes make a spectacular effect above the mats of large green foliage. This plant seems well suited to the foreground of perennial borders or to rock gardens.

Nearly everyone is familiar with the fragrant lily-of-the-valley (*Convallaria majalis*). The unforgettable little white bells, in arching racemes above clean ovate foliage, have been used to garnish many a May nosegay. In flickering shade and leafy soils, lilies-of-the-valley colonize quickly as ground covers. On the other hand, only a handful of gardeners are acquainted with the double form of this old favorite. The tiny, plump chalices with added petals resemble little door knobs.

Over much of our country, creeping phlox (*Phlox subulata*) is a welcome symbol of spring. If not used to excess, particularly the magenta form, the spiny, low mats of bloom, which make solid blankets of color among rocks, in wall gardens and borders, are cheery and appealing.

One of the newest introductions is called Chuckles. Flowers, the size of a dime, are soft pink, with sprightly red eyes. Plants develop slowly and compactly to make cushion-like mats, 12 to 15 inches in diameter. This spring we are eagerly awaiting our first view of a creeping phlox named Scarlet Flame. Said to be the first true red (magentas are all too plentiful), it could become immensely popular, if the color is truly red.

The U. S. D. A. at its Cheyenne, Wyoming, experiment station is giving considerable attention to the hardy pinks or dianthus. Although there are many attractive strongly scented varieties of good color, few are long-blooming or steadfastly hardy. Since thousands of seedlings are being exposed to the severe winters of Wyoming, in a few years some worthy new garden pinks will be available for our gardens.

Perhaps a forerunner of these is dianthus Pink Princess, which carries countless pert, fragrant, fringed blossoms of warm pink. The display commences in mid-spring and continues for many weeks. Add to its free blooming habit the effect of a clump of grayish-green, sword-shaped foliage and you have a plant to look at twice. Doing best in sunny, light soils, not overly acid, it can embellish rock gardens, borders or edgings.

Heucheras, or coral bells, are in good standing with gardeners nearly

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Raspberries Are Worth the Effort

Haydn S. Pearson, Greenfield, New Hampshire

RASPBERRIES ARE among the most rewarding fruits for home gardeners who have the space to accommodate them. Last year we picked 108 pints from a 50-foot hedgerow and contributed possibly a dozen pints to the robins and catbirds. At least half a dozen pints fell to the ground.

I began experimenting with raspberries in 1933. Over the years I have continued in an attempt to find answers to these questions: kinds to grow, amounts of fertilizer, types of soil, most desirable mulches, amount of irrigation and the best height to cut the canes. To me, part of the fun of gardening is experimenting! At present, I have four 50-foot rows in the hedgerow system, one 100-foot hedgerow and one 100-foot row in the hill system, with the hills six feet apart in the row.

In growing fruits and other crops in the home garden, I work on the premise that we want to harvest a maximum crop from a given area. Most home gardeners are restricted in the amount of land available. Often the soil is not the best, and a major task is to increase the humus content, as well as the amount of available plant food.

The Hedgerow System

In the home garden, my first choice for a growing system is the hedgerow. Contrary to the usual advice offered in bulletins, my results indicate that a hedgerow can be kept two feet wide. Bulletins and many writers emphasize a one-foot width.

Above all, the main objective is to grow canes of large diameter. I have proved to my satisfaction that canes can grow as large in a hedgerow two feet wide as in a row of one foot width. The secret of growing large canes is to thin out the old ones each spring or in the late fall. Raspberries are biennial plants. Canes that grow during the season of 1957 will blossom, bear fruit and die in the season of 1958. As soon as the harvest is over, the dead canes should be removed. Each year new canes spring up. Some come from buds on the crowns of the plants, while others develop a considerable distance away, from buds on the far-ranging roots.

Each year when I cut out the canes that have borne berries, I also eliminate all obviously weak, spindly new canes. Then in the late fall, or early in the spring, I go through the rows again and eliminate enough canes so that they are not closer than five to seven inches apart. Often one hesitates to cut out vigorous canes, but thinning is essential for a large crop.

For best results, red raspberries need a well-drained soil, rich in humus. I have grown big crops in both heavy and light soils where drainage was satisfactory. A moist spot contributes to the danger of winter killing, for it keeps the canes growing too late into the fall. With good care, raspberries will bear well for seven to 10 years. Plants seem to prefer a soil slightly on the acid side. I can see no marked difference in yield between soils that have a pH reading of 6.8, 6.2 or 6.3.

The Latham raspberry yields best when cut at five feet instead of six.

In planting raspberries, be certain to eliminate witch grass and other deep rooted weeds before setting out the plants. Above all, do not plant until you get rid of all witch grass! Among the methods I have tried, this is the best. Take a five-pronged, long-handled fork (often called a stone fork) and spade over the area, tossing out all root tendrils. This is also an effective way to eliminate rhubarb roots. Witch grass is a doughty enemy, and I know of nothing that will stunt raspberries more quickly and definitely.

I prefer the hedgerow system to the hill system of planting. This is because I can grow one-third more berries in the same amount of space, although the hill system, placing six to eight canes per hill, is a pleasant system for working. In the hedgerow, space plants 18 to 20 inches apart. If I am buying plants, I always get at least a third more than I need and discard those with the weakest root systems. As soon as a plant is set, cut the cane back to stub, four or five inches in length.

One way to get a row of plants off to a good start, especially in dry weather, is to leave a depression around each cane for the direct benefit from daily watering until plants are established. When planting, set at the same depth as in the nursery.

Another important point is to keep roots moist during the planting procedure. A sturdy year-old plant has a mass of small roots. If these are allowed to dry out, growth is retarded, and in cases of too long exposure to sun and wind, plants will die. Set the plants in a pail of water for a few hours as soon as they arrive. When planting, I keep them in a pail of muddy water.

Cut Back Top Growth

You can pick a small crop of fruit the first year, if you do not cut back the tops. It is poor judgment, however, to permit berries to develop the first season. By cutting back the top of each plant to a short stub, several new stems or suckers will develop. These will bear the following season.

In the matter of feeding, the results are often perplexing. On the basis of what I have learned over a 20 year period, I have one definite recommendation for home gardeners. In soil that has plenty of humus, I get the biggest crops with a 8-16-16 fertilizer applied at the rate of five pounds per 100 square feet.

This is much more fertilizer than recommended by most of the experiment stations. Five pounds per 100 square feet is approximately one ton per acre. My hedgerow is two feet wide, though the roots extend three feet on either side. This makes a row eight feet wide for broadcasting of fertilizer.

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Caribbean, an All-America Selection for 1957, has blue-violet ruffled flower spikes.

Cream of the Gladiolus

Thomas R. Manley, Liverpool, Pennsylvania

THIS SEASON MARKS my 20th year of growing and evaluating gladiolus. Before describing the best varieties available today, I would like for old times' sake to do a little reminiscing.

As any wise grower, I began by checking carefully all the listings of new varieties and selecting from them the best varieties to grow. Actually, if many of these varieties had remained healthy, they would rival the best that we have today.

The list of 20 years ago consisted of the following varieties: Myrna (a seedling in 1936), which proved to be the best exhibition white ever offered; Shirley Temple, ruffled cream; Veecream, a blotched cream; Gold Dust, a deep yellow; Picardy, the most outstanding gladiolus ever introduced; Peggy Lou (a seedling introduced in 1937), Rewi Fallu, a huge rich red; Eleanora, a tall rose with 12 open flowers; King Arthur, lavender, and Bagdad and Mother Machree, large, spectacular smoky varieties.

It was a real thrill in those days, to visit gladiolus shows and see the enthusiasm shown by nationally known exhibitors, who today still take an active part in our countless gladiolus exhibitions.

To say 1956 was a good year for gladiolus is putting it mildly. Cool weather and countless showers enabled plants to outdo themselves. Therefore, I have been severe in evaluating new varieties in order to designate poorer varieties which may be performing well because of ideal weather conditions.

Outstanding varieties in gardens and in shows were easily narrowed down to five, which were definitely superior wherever grown. Lorelei, a tall creamy white, is the number one choice. Violet Charm, a soft violet with blue throat, is the most consistent grower and promising commercial variety. Prospector, a large yellow, with deep amber throat, is faultless in form and excellent for commercial use. Wildrose is a rose-pink, with white florets, while Loretta is a lovely pink, with a clean white throat. These appear to be among the leaders for many seasons.

White gladiolus, as a group, have shown great improvement recently. For the show table, Polar Bear, with 12 or more six-inch florets, has faultless form. Equally tall and majestic are Snow Clad and White Plume. Pinafore, a sparkling ruffled snowy white, is the ideal medium-sized white. The white sport of Friendship, which is being introduced as White Friendship, and Bow Bells will become our standard commercial early whites. Snow Velvet and Mother Fischer, along with the ever reliable Florence Nightingale and Sierra, round out the class.

Lavender and White

Sparkling Eyes, a rosy lavender blotched white, is by far the most outstanding blotched variety. Lorelei, at present one of the best of the cream gladiolus, has habits of growth unequaled in most others. Included in this class, too, are Leif Ericsson, a tall, sturdy grower, and Adorable, from Holland.

Light yellow is at its best in Prospector, with its smoothly blended amber throat. Ruffled Goldbank and the Dutch varieties, Fulda and Yellow Triumph, make tremendous spikes of high cut-flower quality. Golden Sunshine, a replacement for Gold, with its long flower heads, leathery substance and rugged growth, and Fort Knox are favorite large deep yellows. Medium-sized Golden Boy, with canary yellow blooms, and heavily ruffled, fluted Goldruff are top notch yellows for use in arrangements. Catherine Beath, a deep, golden yellow, is superb in the late fall, since it blends well with deep autumn tones.

Buff-colored Varieties

Buff, always a strong color and formerly dominated by faultless Patrol, now has two outstanding new varieties in its color class. A. B. Coutts is a pleasing shade of apricot buff, while Golden Palomino is a deeper buff.

The rather weak orange class is gaining with several new varieties of promise, including Fortune for the show table and Regina and Orange Flame for use as cut flowers. Cheer Leader is a bright, orange red, with a sparkling yellow throat, punctuated by rich maroon blotches.

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Step Up Your Garden

Kenneth Meyer, Hancock, Maryland

STEPS ARE BOTH USEFUL and attractive features in the garden. Aside from their interest and charm, they make walking easier and pleasanter, even where the difference in the ground level is slight. When there is considerable change in ground level, a little thought and effort in laying a step or two relieve the grade. At the same time, the effect is attractive as well as practical.

I once saw this well illustrated in the approach to a lily pond in a country garden. The ground sloped away gently for about a hundred feet and then leveled into a lightly shaded area. The difference in ground level, not more than three or four feet, had been broken by three pairs of steps, set at equal distances apart. The forms for the steps were made of peeled locust logs, six feet long, held firmly in place by stakes driven into the ground. There was a fill of finely crushed brown sandstone to form the actual step. The effect was pleasing and made the short walk to the pond more interesting.

Sometimes a single step leading up or down to a sundial or bird bath can be constructed of one or two large stones, or several small ones fitted neatly together, and held in place by a little cement, colored so as to make it inconspicuous. Steps of natural turf are lovely, providing the soil is reasonably heavy to grow a sod that is dense and strong enough to hold together firmly.

Steps of Sod

Made with concave treads, instead of straight across the front, sod steps will hold their shape for many years because of better support. Since they tend to lend an atmosphere of formality, they are desirable where something choice is needed. They do, however, require frequent mowing and trimming to keep them neat.

Steps, like other garden features, may be informal in character, even rugged, or they may be formal and imposing, depending upon their surroundings. Large, thick pieces of fieldstone are appropriate in almost any setting, and single pieces are often wide and deep enough to furnish both tread and riser. Sometimes they can be laid dry on solid earth, which has been well leveled and tamped. They are also especially useful for low flights of steps in small gardens.

Among the most commonly used materials for making formal steps are cut stone, brick, slate and flagstone. All require strong foundations of concrete to keep them in place. In Washington, D. C., one frequently sees formal steps of cut flagstone supported by brick risers, a combination which in some instances is more pleasing than steps made entirely of bricks. Whatever material used, steps demand symmetrical balance, as well as a firm foundation and good shoring to prevent settling and shifting out of place in the course of time.

There is a great deal of satisfaction in adapting materials for steps to their surroundings. Sometimes, blocks of stone or blocks made of bricks can be set in grass with a wide tread of turf between them. In some settings these are very satisfactory. To prevent heaving during the winter, blocks must be set in solid concrete. Natural stone slabs, laid in opposing curves, are ideal for woodland steps and combine harmoniously with plantings of native shrubs.

Whatever material is used, certain basic principles must be observed when constructing garden steps. They are always more pleasing when wide enough for two persons to walk side by side. Such steps suggests liberality and companionship. Short flights with a gentle lift look best when built with treads at least 18 inches wide and risers not over six inches. Wherever possible, a landing should be used to break the flight. This adds considerably to the appearance and makes the ascent easier. Four or five steps in a series between landings is enough, preferably not more than three.

Generally speaking, all garden steps are more satisfactory and look better when made with wide treads and low risers. Avoid any suggestion of steepness, especially in flights that are built with a turn to achieve certain effects or to take advantage of ground conformation. Great care should be exercised to see that the finished steps are solidly constructed, and do not tilt or slip the least bit when walked on. It is also important to make certain that the soil at the ends and corners is made especially solid and that every crevice is filled with tightly tamped soil.

There is no professional secrecy in connection with building attractive and useful garden steps. The best way to begin is by constructing a single step or two, perhaps leading to a raised

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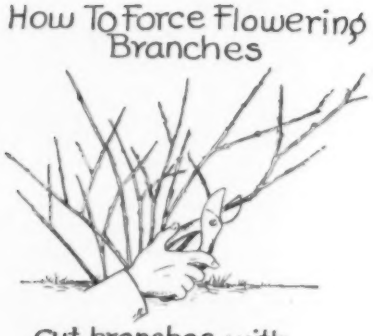
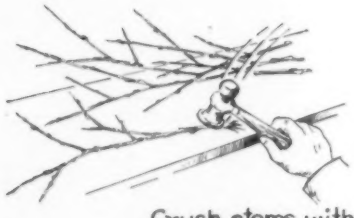
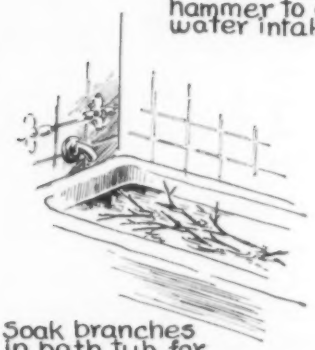
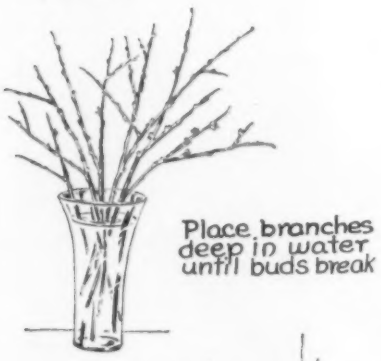
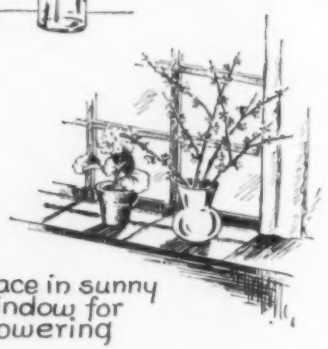
Wide treads with low risers make walking easy and tend to reduce the effect of steepness where changes of level occur. These cut-stone steps blend harmoniously with the adjoining walls and make an effective setting for a variety of plants.

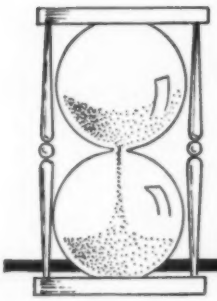












NOW IS THE TIME

As FEBRUARY'S DAYS lengthen, house plants will begin to make new growth. This is an indication that it is time to repot them. For most kinds, use an all purpose mixture and shift to a larger pot without disturbing. With others, remove soil from top with a spoon and add fresh soil containing fertilizer.

More House Plant Care

After repotting house plants, cut back leggy or sickly growth and shape them to improve their appearance. Feed all kinds, whether moved or not, using a balanced fertilizer to aid growth. Take cuttings from African violets, coleus, geraniums, patient plant and others for new plants to use in window boxes or in the garden later. On mild days open windows to give plants fresh air.

Rest Your Poinsettia

When the foliage on your poinsettia has fallen, reduce watering gradually to prepare the plant for its dormant period. Finally place it in cellar or spare room, withholding all water, until warm weather time. Then, cut back stalks to four or five inches, repot if necessary and place out-of-doors in a partially shaded spot for the summer.

Head Start on Spring

Cut branches of forsythia, flowering quince, winter honeysuckle, Oriental cherries, silverbell, Korean azalea, Cornelian cherry, Chinese witch-hazel, flowering dogwood and others on a mild day for forcing indoors. Cut branches as long as possible, crush stems with hammer and place deep in water for several days before bringing to light. Flowers will be superior and longer lasting if forced as cool as possible. See sketches opposite.

Water Potted Evergreens

On mild days, when the soil is not frozen, water deeply and thoroughly evergreens, boxwood, English ivy and other plants grown in tubs or window boxes. Neglecting this need is the most common cause for their death. Also shake snow off them while still fresh and fasten together branches of those apt to spread apart with the weight of snow. In the early spring, feed and cut off winter-killed portions.

Start First Annuals

Indoors or in the home greenhouse start seed of slow growing annuals such as patient plant, coleus, wax begonias, Madagascar periwinkle (*Vinca rosea*), verbena, dwarf dahlia and salvias. Use a seed fungicide to prevent damping-off disease and sterilize the soil or other sowing medium. With faster growing petunias, zinnias, annual phlox and others wait until next month or later.

Other Seeds To Sow

If you like delphinium, seed of hybrid varieties sown now will produce flowering plants this summer. Plant pansy seed and you will have plants ready to bloom in a matter of weeks. Since they will come into flower later than seed sown last season, they will continue to bloom later in the summer. Use a light soil and shade from too hot sun.

Summer Bulbs to Start

Start indoors gloxinia bulbs in trays or small pots in light, humusy soil at 70° F. Transfer to five or six-inch pots when tops develop three or four leaves and grow in strong light, but not the hot noonday sun. A good soil mixture to use consists of one part each of peatmoss, leafmold, good loam and clean sand. To a five-inch pot of soil add a teaspoon of bonemeal.

Some Other Kinds

For something more unusual try the summer-blooming achimenes, trailing plants with tubular flowers. Give the tiny rhizomes a start in a medium of vermiculite, sphagnum moss or screened peat at 70-90° F. and transfer three to five in four-inch pots for summer color. Calla lilies planted in rich soil at 50-60° will flower in summer. Also start fancy-leaved caladiums at 70° or higher for color in the shade in the summer.

Make a Kitchen Garden

You can have quick growth from a sweet potato vine by starting a tuber in a jar of water. A hyacinth jar can be used for this, as well as to root the seed of an avocado. Plant lentils in colorful bowls for bright green growth and keep several coming along until spring. Seed of orange, grapefruit, lemon, mango and other tropical fruits will also make interesting house plants.

For Early Bloom

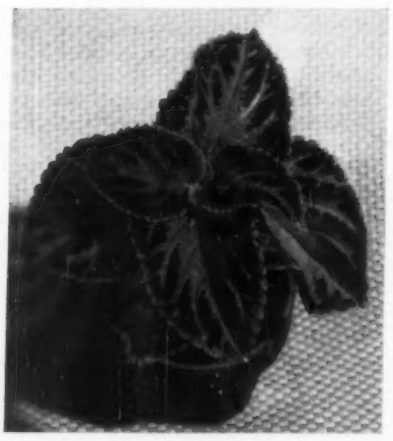
For extra early bloom in the garden, start the first tuberous begonia tubers in flats or pots of equal parts sand and peatmoss. Place just under the surface and keep the concave ends up. Keep at 70° F or higher in order to start into growth, and then transfer to four inch pots when they have developed three to four leaves. Provide sufficient light to prevent weak, spindly growth.

The Month to Plan

February is the month to make all kinds of plans. Look over your grounds and decide where you will plant trees for shade or decorative effects. Study the present design and decide how it can be improved. When new catalogs arrive study them carefully and make choices of new and different plants and flower and vegetables you will try this season.

Remove Snow Gently

When heavy snow bends down yews, boxwood, leucothoe, hemlock, arborvitae and other needle and broad-leaved evergreens, lift branches gently and shake it off carefully. The weight of the snow can break the branches if hit abruptly and forcibly. An old broom and a whisk broom are excellent tools to have handy. When removing snow from plants do so when newly fallen, especially if wet.



Coleus seed sown now will allow time for seedlings to develop before spring.

Growing Gesneriads from Seed

Pearl Arthur, Nashville, Tennessee

ALL THE GESNERIADS that I have seen have spectacular blooms and striking foliage. With a little extra care they make thrifty house plants which cannot be said of all pot plants. Except for African violets and gloxinias, they are hard to find in commercial greenhouses, and all of them are expensive when bought as plants.

On the other hand, gesneriads can be grown from seed at low cost and they will bloom at about the same time as plants started from leaves and cuttings. The annoying fact about this family of plants is that most of their names have been changed, sometimes more than once. In addition they are difficult to pronounce.

Gesneriad seeds, like those of African violets, are like specks of dust and must be planted carefully. All I have tried have germinated well. I sterilize my soil (a mixture of ⅓ compost, ⅓ garden soil and ⅓ sand sifted together) by heating for two hours at 250° F. in the oven. The soil mixture is put in an old pan and a cup or two of water added, then covered with a piece of aluminum foil before putting in the oven.

After the soil mixture has cooled for at least a day, or longer, it is put in a pot and topped with a half-inch layer of fresh or sterilized vermiculite. Another layer of vermiculite, sifted through a fine strainer (I use an old tea strainer), is sprinkled on top until no trace of the coarser vermiculite can be seen. Seed is sprinkled on top as thinly as possible and no covering is added. The pot is set in a pan of warm water until moist on top, then covered with a piece of glass and set in a warm place.

Generally, seedlings begin to appear in two weeks, although I have had to wait almost two months before seedlings of some kinds appeared. Therefore, do not become impatient and discard your seed too soon. After the seeds have germinated, set the pot in direct light, but avoid strong sunlight, since gesneriads grow and flower profusely when treated in this manner.

The seedlings appear slowly at first, but soon become crowded. I usually lift them out in clumps for the first transplanting. For best results, I divide them after the clumps have grown a little. A friend successfully lifts her tiny plants out with a toothpick for their first transplanting. I add a little bone-meal and superphosphate to the potting mixture.

Streptocarpus, or cape-primrose, a gesneriad that can be raised easily from seed.

When the plants are growing well, I apply a little liquid fertilizer about every two to four weeks. I never use it stronger than the manufacturer's directions, generally a little less. Gesneriads need all the humidity you can give them when grown in the window garden. They will also grow well under fluorescent lights, provided there is enough moisture in the air. Plants should be watered with tepid water whenever the soil gets dry on top.

Gesneriads that can be grown from seed include *Isoloma hirsutum, now* classified in the genus *Kohleria,* and trichosporum, whose generic name has been changed to *Aeschynanthus.* Both of these make excellent hanging plants. *Corytholoma cardinalis* (*Gesneria cardinalis*) produces tubular, scarlet flowers and velvety leaves. Naegelias, now placed in the genus *Smithiantha,* are equally showy with an abundance of orange and yellow flowers, borne above richly textured foliage. Chirita with clusters of white and lavender-blue flowers, is an easy candidate.

African violets, gloxinias and streptocarpus may also be grown from seed. For me some of these germinate in two weeks, while others require five or seven weeks.

Naegelias, gloxinias and corytholoma make tubers which go dormant after blooming. They should be stored in a warm basement or room, since they cannot withstand freezing temperatures at any time.

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Difference in Grass Seed

Continued from page 73

ease in hot, muggy weather of summer. If bent grass has become patchy, such "temperament" can produce discordance.

Lawn mixtures may contain certain other species, perhaps without harm, but probably without benefit. Redtop, a relative of bent grass, has long been used as a nurse grass. In recent years, the idea of a quick-sprouting, aggressive nurse grass has fallen into disfavor. It competes with the somewhat slower perennial grasses for water, nutriment and space at a rather critical time.

Many experiments have shown that nurse grasses set-back, delay or even prevent establishment of the sought-for grass. Then they are more properly termed "smother grasses." Rye grass is one of the worst offenders, since it seems to produce antibiotic substances that can restrict desirable grass growth.

On steep slopes, where a mulch cannot be secured, nurse grasses are particularly useful. Here the need for quick cover overshadows all else, and the large rye grass seeds can yield sturdy, aggressive sprouts quickly.

Reason for Mixtures

Why seed mixtures? It's rather simple: few of us are able to tell exactly which species will thrive best in the myriad of sub-environments that constitute any lawn. Pockets of differing soil, exposure and degree of shade, drainage differences and even year-to-year deviations favor now one, now another grass.

Considering that much expense and effort are usually involved in seedbed preparation, the most economical approach is to blend several kinds of seed. Thus, the purchaser has the assurance that if one finds conditions less than favorable, another may succeed.

Reliable seedsmen compound their mixtures of those grasses which are adaptable to a given area. For most northern states this includes high proportions of Kentucky blue grass and red fescue, with bent grass, rough blue grass and perhaps other species optional. With these listed as components on the box, and a reliable brand assuring clean, full-weight seed of high germinability, a lawn seed purchaser can make as sound a purchase as with any other product.

Even though good seed may be more expensive by the pound, it goes farther and offers lasting satisfaction. It is not economical, at any price, to plant weeds and impermanent grass. Yet that is what you are likely to do if you fail to *choose* your lawn seed wisely.

Cream of the Gladiolus

Continued from page 80

Salmon, a class long dominated by Boldface, now has a new ruler in the super giant deep salmon, Salmon Queen. Serving as ladies-in-waiting from Holland are Kosmos and Broadway Melody, the latter a florist's favorite of great substance and excellent keeping qualities.

Scarlet varieties are improving each year, since new kinds, which will not fade or burn, are becoming more numerous. Sans Souci is probably the most widely grown scarlet variety today, but its failure to open from tight buds is limiting its popularity. Viking, a bright scarlet, with bold white lines on the throat, produces ramrod spikes of great commercial value. Revelation is as big and brilliant as is Albert Schweitzer from Holland. Dieppe and David Warr, which are difficult to tell apart, are fairly reliable and widely grown.

Although pink varieties are numerous, few can equal the perfection of Coronation. Giant Ethereal, from Australia, with 12 or more six-inch florets, and Paul Bunyan, appropriately named, are truly massive beyond words.

Blended Ruffled Beauties

For sheer beauty and form, Loretta, with its fresh and sparkling white throat, convinced me that Spic and Span has been surpassed by this greatly improved variety. Dorothy D, another pink, is medium in size. No list is complete without mentioning the exquisitely ruffled and waved Bermuda and Carmen Corliss. Not especially tall, they stand alone as blended ruffled beauties in pastel shades of pink.

The ever reliable Friendship, at present, holds the enviable reputation as the best early gladiolus, irrespective of color. This ruffled pink beauty, with cream throat, could well be crowned the "Picardy of 1956." Many blush pink and pure white sports of Friendship are appearing, which will be welcomed as we need early varieties with the characteristics of Friendship.

From the well represented pink class, we come to the weakest color class of all, the red. The first All-America Gladiolus, Royal Stewart is without doubt capable of producing exhibition spikes. However, the health of this variety is questionable, as it needs pampering to keep the bulbs healthy. Widely grown, it will create a stir in flower shows throughout the country. Harrisburger, a super growing red, capable of always winning, like most reds, has its faults.

Please turn to next page

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Cream of the Gladiolus

Continued from page 85

For example, stems shorten from old bulbs. Hence, young medium-sized bulbs produce more balanced spikes.

Red Radiance, a light red, is a consistent grower that makes an ideal cut flower. Hilltopper, a strong, healthy grower, will give the industry a vigorous red for future hybridization. A new velvety deep red from Holland is called Oscar. Producing tremendous overhead spikes, with eight huge six and one-half inch florets, Oscar will become a threat to every red variety because of its vigor. Bulbs are also a deep black red in color.

The black-reds are becoming more numerous with Dark Brilliance, Negro Boy, Ruffled Ebony, Dark David, Thunderbolt, Congo and La Corunna, to mention a few. The best of these is Congo, a six and one-half inch giant, with 10 open florets, always perfect in placement. The thick, glossy petals have great resistance to wind and sunburn.

La Corunna, from Holland, is a slightly smaller version of Congo, with a clean white line on the midrib of each lower petal, making it an eye catcher. Negus, a medium-sized black-red, holds 10 to 12 open florets on tall graceful spikes. Like many reds, it does best from medium-sized bulbs. Black Boy, another medium-sized variety, is the blackest red yet introduced from Holland, where many good black-red varieties originate.

Rose-colored Selections

Rose varieties have appeared in ever increasing numbers during the past 10 years. The purest and most delicate rose is Innocence, informal in appearance. Its long flowerheads dominate any planting. Innocence will prove to be one of the outstanding introductions of 1957, for height, substance, earliness and color. Appleblossom, another All-America, truly deserves that honor. A creamy ground color, stippled rose in a typical "Corona" pattern, Appleblossom is early and has all the habits of Friendship.

Maytime, the 1957 All-America Selection, is a clear, clean, ruffled medium-rose or deep pink, which has a clean white throat, with the color extending along the midrib of each petal. Long flower heads are typical of the All-Americas. Some are 30 to 32 inches long on 62 inch spikes.

Carl Fischer, Dean of American hybridizers, has not only produced the above All-Americas, but has two distinctive rose varieties in Wildrose, a medium rose, with a huge white

Maytime has ruffled medium-rose blooms with a white throat.

throat, and Rose Spire, a lively, clear rose, with tapering spikes. Typical of all Fischer varieties, they are tall, with many open, clean, clear florets of great substance. Traveler and Shirley Irene are both rose-colored varieties, while Edgewood and Rosita are the best medium-rose tone types.

Lavender is represented by three varieties. Carl Fischer's huge Campanile is tall and well balanced, with eight to 10 wide open six-inch florets. Vera, a pale, frosty lavender, has both size and substance. Tyrone, a formal medium lavender, has excellent cut flower qualities.

Purple, the color of royalty, is a plentiful color, with King David and Wonder Boy heading a long list of varieties. None of the new varieties measured up to the excellence of these tall growing, richly endowed kinds. Older varieties, like Purple Burma and the Rajah, continue to give a good account of themselves. Troubadour, a Fischer origination, promises to give the purple class a new face. It is a worthy competitor to any purple.

Even though the violet class has few good representatives, none can compare with Violet Charm for cut flowers. A show variety, it is faultless as a violet type. Blue Radiance is runner up for the "blue" among blues, with giant Salmans Sensation, a deep violet coming third.

Admiral, once widely disseminated, may prove to be the outstanding introduction of this color in many seasons. A glistening, deep blue, it has eight-10 florets in a ribbon of color. Caribbean, the first distinctly ruffled blue-violet is one of two All-America Gladiolus Selections for 1957 which promises to be exceedingly popular.

The smoky varieties, particularly those with bright, contrasting throats, are becoming increasingly popular with flower arrangers. Dusk, a huge plum, with a white throat; Tan-Glo, a smooth tan with white throat; Southern Belle, a slate pink, with white throat; and Copper Lustre, with its brilliant smoky bronze tones make a foursome difficult to describe. Watch for Gunsmoke in 1957, a blended beauty of smoky salmons, with a clear contrasting throat. One of its parents is Spic and Span.

The odd color class is now dominated with green or chartreuse varieties. Many of these are unusual color combinations, which often vary from the originators' descriptions. Of all the so-called greens, Chartreuse is the best

Please turn to page 110

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It's Time to Prune Your Trees and Shrubs

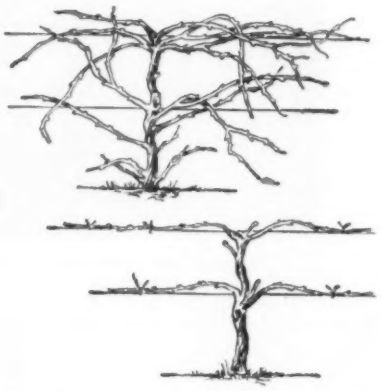
LATE WINTER and early spring is the time to begin pruning trees and shrubs. By doing it now, you will gain a head start on spring when there is more to do than time allows. Check to be sure that your tools are clean and sharp in order to make neat cuts. Then select mild days in which to do the pruning.

The first step is to study your plants and decide what needs to be cut. With all trees and shrubs, it is a basic rule to remove any branches that are dead or diseased, as well as any that are lacking in vigor.

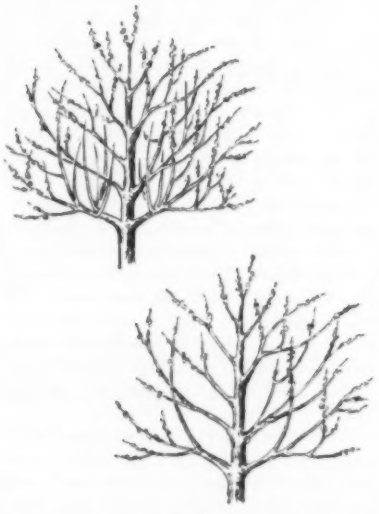
To thin and open up, remove thick growth, but with spring-flowering kinds be sparing in order not to cut away too much wood on which flowers will appear. Summer-flowering shrubs, for the most part, are better cut back a little later in the season when warm weather will indicate the amount of winterkill.

When pruning trees, eliminate V crotches which are weak and break easily in storms. Remove branches that cross or rub against one another, and thin where needed to permit the free passage of air and sunlight during the growing season. If you plan to cut large branches, make certain that all cuts are flush with the trunk or branch. Other-

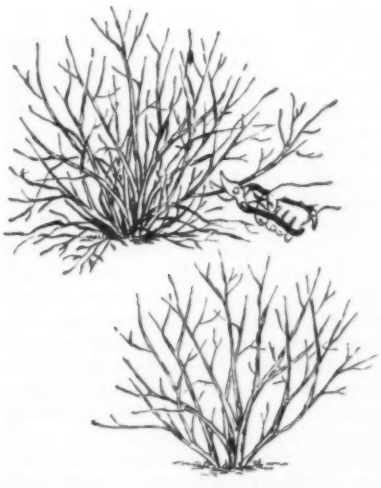
On raspberries cut to the ground all old canes that bore fruit last season. Head back canes that are a year old.



Clean out grapes and allow a few of last year's branches to remain. Grapes bleed freely if pruned in spring.



With apple trees eliminate branches that cross and thin dense growth to allow air and sunshine to enter freely.



Prune spring-flowering shrubs lightly by cutting out dead, weak and diseased wood along with excessive growth.

a violet type. Blue Radiance is runner

Please turn to page 110

wise any stub that is left will rot and even spread the decay to the tree. Cover these cuts with tree wound paint, as well as any that measure an inch or more in diameter.

This is the proper time to prune fruit trees. Open up apple trees and as usual prune away any dead, weak or diseased wood. Do the same with pears, but be less drastic, since too many cuts are invitations for the spores of the fire blight disease to get a start. Plums and cherries along with peaches require light pruning to do away with undesirable growth. Grapes particularly are best pruned at this time, for if you wait until later in the spring, vines bleed freely. Fruit will appear on last year's branches, so leave a few of these from two to four feet long.

Some trees produce suckers at the base. When they occur, cut them off at this time. Also remove "water sprouts". These thick, vigorous sprouts, appear along large branches or at points where branches were broken. Most of all, sterilize tools between cuts by dipping cutting parts in radiator alcohol.

When removing branches from trees make the cut flush with the trunk or branch. Sap from tree will then heal cut.

Do away with dangling branches broken by storms. Cover cuts with tree paint to prevent diseases from entering.

Since V crotches are weak and tend to split easily in storms, correct by removing one of the two branches.

Cut out suckers that develop at base of some trees and remove "water sprouts" from trunk and large branches.

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Aristocrats Among Flowering Shrubs

Continued from page 71

from imported seed. In especially favorable local conditions and with considerable skill and originality in handling, he succeeded in growing seedlings of a good many of the best British sorts and their progeny which he subsequently worked upon his foundation stock. Consequently, a large number of hybrid plants of great beauty have emerged, some of them as lovely as leading British cultivars. These constitute a race or strain hardy at zero.

Other experimenters in the northeast, notably on Long Island and New Jersey, have followed in the wake of Mr. Dexter, and it appears that more worthwhile, new things are in the offing. These might be set into two general categories: first, individual plants of variable species which have survived cold weather and then proved hardier than the average of their brethren; second, new hybrids, such as Dexter's, into which hardiness has been bred. Through these two channels, we are slowly augmenting our list of "cold weather" rhododendrons.

Hybrids Flourish Here

Meanwhile, repeated trials and the raising of seedlings elsewhere in America have yielded new results. The Pacific Northwest, long dormant, has now become "rhododendron wise," and all sorts of species and hybrids are being grown there fully as well as in England. Although the cult in that region is rather new, the West Coast, from San Francisco northward, can now demonstrate the growth of almost any Asiatic species of rhododendron. Accordingly, the future expansion of these plants in that region appears boundless.

In the South, azaleas, particularly the Oriental species and their derivatives, have taken possession of the people's fancy, and public display plantings have become civic features in many localities south of Philadelphia. In much of this territory, the hot summers are unfriendly to some of the true rhododendrons, but in mountainous areas many promising new things can probably be grown. Thus far, reports have not appeared which would show the progress of trial plantings in such regions, but the conditions would indicate that much may be done when species and varieties fitted for the climatic conditions are recognized.

Most surprising of all, the growing of azaleas and rhododendrons in the midwest has proved possible under carefully-controlled conditions of shade, moisture, soil and shelter. These are reported from Texas, Missouri and Nebraska.

Thus, it will be seen that rhododendrons and azaleas, under appropriate growing conditions, can succeed in many places, some of which may be rather different from their natural, wild habitats.

At this point, however, it may be well to consider their natural environments for hints of what they like best. In America, the main concentration of species occurs in and about the mountains of the east—up and down the Appalachian range and on the Pacific coastal side of the Rockies. Outlying members are found in the adjacent lowlands—along the east and west coasts and in the lower south—but the wild species occur most abundantly in the mountains. There are a few alpines, such as *R. lapponicum*, occurring at the summit of Mt. Washington in New England, as well as around the Arctic Circle. Two or three more dwarf, arctic species occur in the far north, such as in Alaska.

Our Debt to China

In Asia, their habitats are similar, except that they extend to great altitudes and into the tropics. A good many kinds, including numerous azaleas and the entire stock of that important azalea group called the Obtusum subseries, occur in Eastern China and Japan.

It is in the mountains of Western China, extending down into the rain forests of Burma, Northern India and adjacent regions that the world's great storehouse of rhododendron species occurs. Here one encounters species by the hundreds, ranging from the dwarf table-top alpines, only a few inches tall, which occur on the snowy meadows of 16,000-foot mountains, to the tree rhododendrons and the tender epiphytes found in the dripping tropical forests of Malaya.

One will perceive that this range is tremendous. Also, it may be noted that it is as difficult to duplicate, in cultivation, the conditions of the high altitudes as it is to duplicate those of the subtropical forests. A climate without extremes of heat or cold, wetness or dryness—such as may be found in certain favored spots in Britain or on our northwest coast—will accommodate a maximum number of these exotic species. However, persons living elsewhere will generally be well-advised to attempt growing only those kinds that fall naturally within a reasonable range of conditions comparable to their own. Beginners who are desirous of planting sizeable collections will find it advisable to consult specialists who grow these admirable plants.

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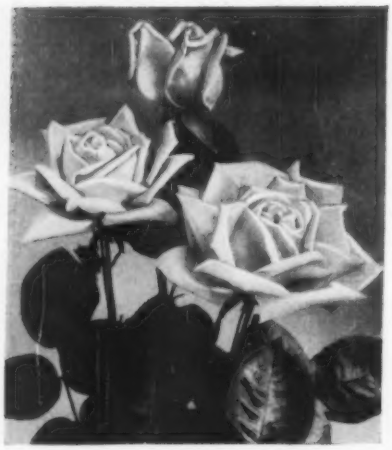
Rainbow of Roses for 1957

Foster H. Franks, Park of Roses, Columbus, Ohio

IT'S GOOD NEWS for gardeners to learn that fragrance is becoming a highly important factor in the development of new roses. For a number of years we have seen many notable new varieties introduced, spectacular in color and foliage and in general performance, but lacking fragrance, a most essential quality.



Ardelle, a white hybrid tea

Words cannot always convey this subtle quality in a flower, but some gardeners have such a keen enthusiasm for flower scents that they are strongly influenced by fragrance or the lack of it in selecting varieties.

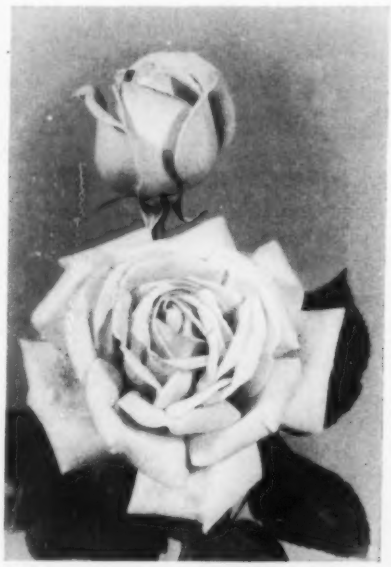
Sumatra, described as iridescent signal red, has an Oriental flare in the brilliance of its color. This new floribunda, originated by Charles Mallerin of France and introduced by Conard-Pyle Co., has attracted considerable attention in many test gardens. Among the features of this new rose are its free branching habits, vigor, disease resistant foliage and nut-like fragrance. This rose received excellent comments at the Park of Roses, which adjoins the office of the American Rose Society in Columbus, Ohio.

Moonsprite, a floribunda from Armstrong Nurseries, is characterized by urn-shaped buds of pale gold and yellow centers that shade white at the outer edges. Somewhat suggestive of a chrysanthemum, the high-centered blossoms average two inches across and are borne on compact plants with light green foliage. An ideal rose for use in shrub plantings or with perennials, it should make an effective hedge.

June Bride, introduced by Bosley Nursery, holds the distinction of being the first white grandiflora. Developed by Roy E. Shepherd, noted rosarian of Medina, Ohio, plants average three to four feet, but many grow taller if left unpruned. The creamy white flowers and buds, accentuated by crinkled, holly-like foliage, are bound to enchant flower arrangers.

The glamorous name Mexicali Rose has been given to a floribunda originated at Germaine's in California. The bloom clusters vary from bright yellow to a deeper tone, with a variety of pink and red suffusions. Fully opened flowers, with their quilled petals, are suggestive of small dahlias.

Betsy McCall, an appealing floribunda developed by Eugene Boerner,



Pink Lustre, a hybrid tea, has blooms that measure four to five inches

is a sparkling pink. The shapely coral-pink buds will be sought by flower arrangers, though this rose is equally showy in the garden. Its free-flowering habit and attractive growth are other points in its favor.

The introducers, Peterson and Dering, describe their new floribunda, Amy, as resembling a pink pincushion when in full bloom. The symmetrical flowers, with pointed buds, are borne in clusters atop two and one half foot plants.

The floribunda Texan, developed by Robert V. Linquist and introduced by Howard Rose Co., produces medium-sized red flowers which are yellow at the base. Although a thorny plant, it is noted for its vigor, and the flowers are moderately fragrant.

The introduction of an outstanding white floribunda to this versatile group of roses will be welcome news to gardeners everywhere. The gardenia-like blooms have a delicate spicy fragrance, and this All-America Selection winner is most appropriately named White Bouquet. Since the plants average one and one half to two feet in height, White Bouquet will lend itself for low hedges or in groups among the more brilliant floribundas.

Ardelle is a shapely white hybrid tea with long pointed buds, with petals that curl back as the flower opens. Another seedling of Peace, it was selected for its vigorous branching habit and long stems. Although introduced by Melvin Wyant as a white rose, the pink and cream tints present are influenced by weather conditions.

Summertime rates high in color and fragrance. Slender, deep pink buds open to a lighter pink and medium sized blooms appear in great abundance above olive green foliage. Plants averaging slightly less than two feet in height are from Jackson & Perkins.

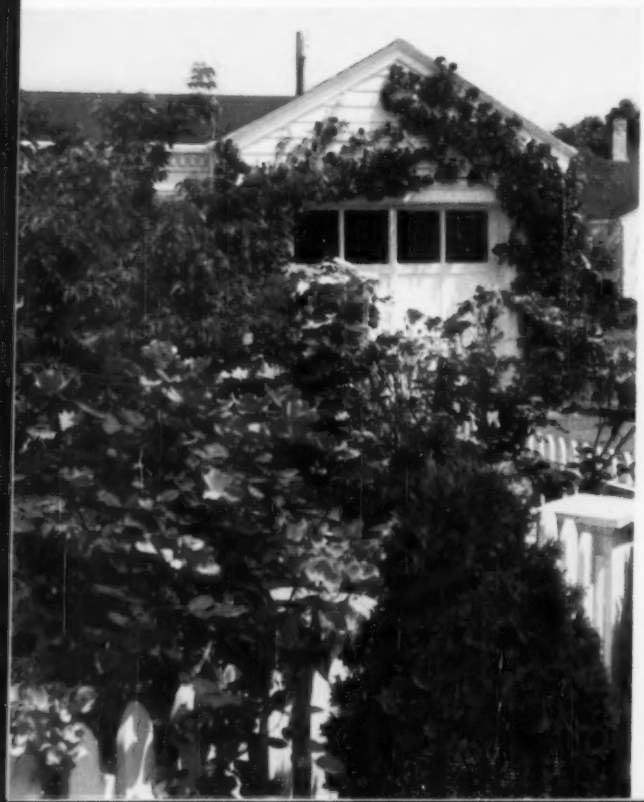
Please turn to page 95

Midnight, dark red hybrid tea

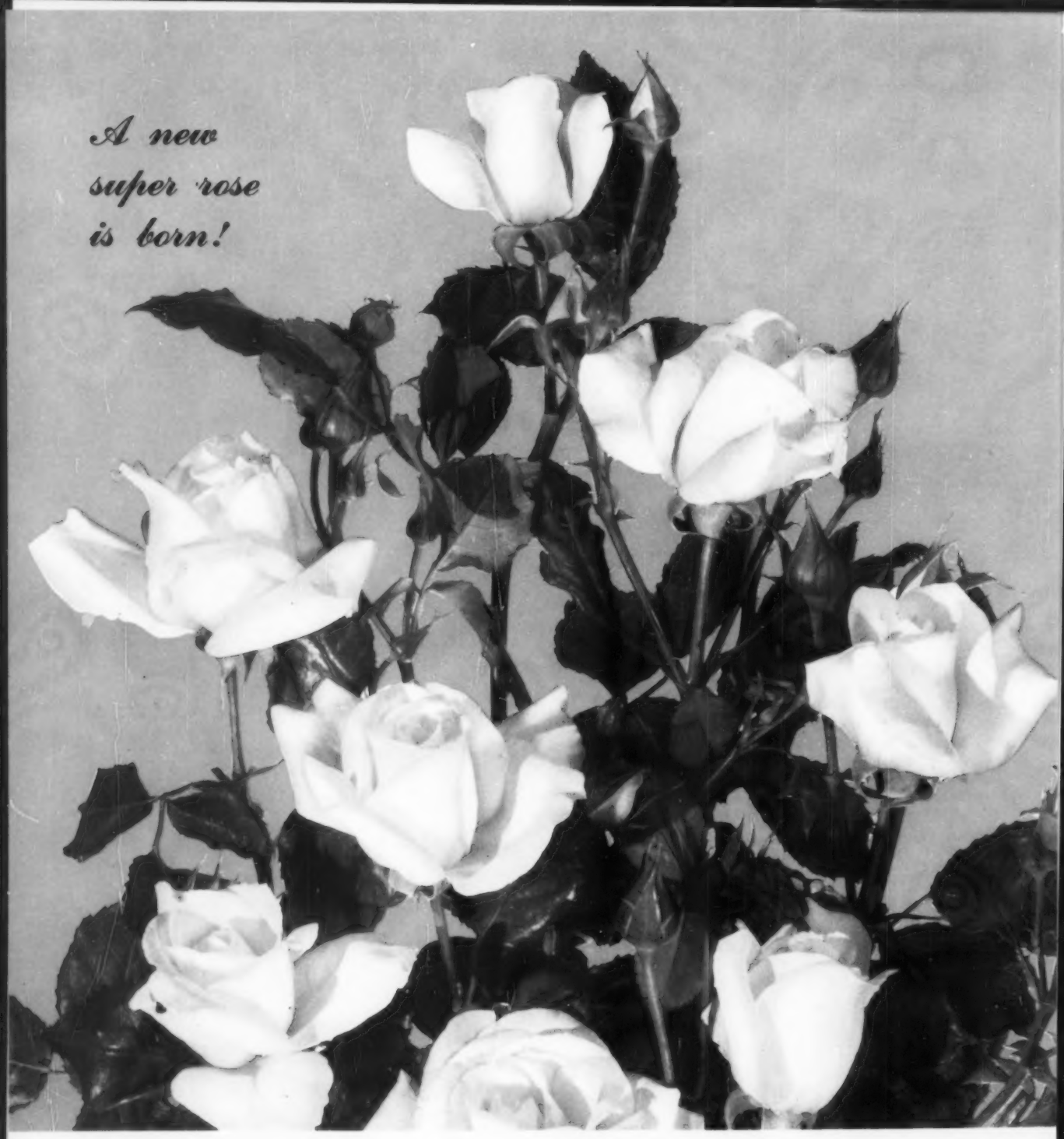
Floribundas, climbers and hybrid tea roses perform double duty in a foundation planting and an informal rose garden

Highlight Your Garden with Roses

Floribunda rose Betty Prior and Paul's Scarlet Climber still rate high



Hybrid tea rose Orange Ruffels, distinctive in color and performance



June Bride p. a. f.

The FIRST WHITE GRANDIFLORA ROSE...

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The BOSLEY NURSERY

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Rainbow of Roses for 1957

Continued from page 92

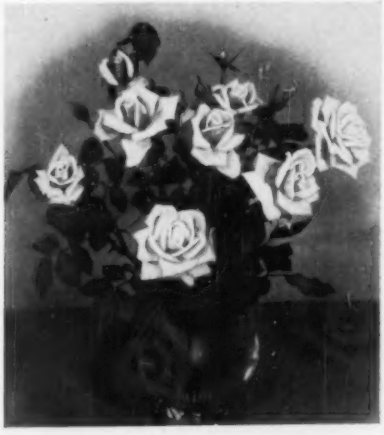
A pink hybrid tea of Spanish origin, originated by Pedro Dot, has been named Linda Porter for Mrs. Cole Porter. This firm-textured rose, offered by Bobbink and Atkins, is exceptionally large in size and is expected to attract special attention on the show table, in the garden or as a cut flower.

The highly rated hybrid tea Burnaby has captured many honors in this country and Europe and has received a rating of 8.6 out of a possible 10 points from the American Rose Society. The warm yellow blooms average four to six inches in diameter.

Pink Lustre, from Jackson & Perkins Co., developed in Holland, promises to be a spectacular hybrid tea, described as a cool pink. The rippled edges of the petals are somewhat deeper than the rest of the flower. The exceptionally large flowers measure four and one half to five inches across and reflect some of the character of the widely known Peace rose, which was used in the development of this new variety. Glossy, dark green foliage is another of its characteristics.

Lady Elgin, a hybrid tea originated by Francis Meilland of France and launched by Conard-Pyle Co., is an unusual combination of orange and apricot. This brilliant combination is particularly enduring, even in the heat of summer. The fat buds and shapely flowers are borne on exceptionally long stems, which will delight flower arrangers.

Dark red roses have never been plentiful, and the introduction of a new variety called Midnight is good news for rose enthusiasts. Its free-flowering habit, its cinnamon-clove fragrance and free-branching habit, plus its resistance to mildew, are among the claims made by Armstrong Nurseries for this new rose.



June Bride, first white grandiflora

Sumatra, a vivid red floribunda

White Bouquet, an outstanding floribunda

Golden Wings, originated by Roy E. Sheppard, is introduced by Paul R. Bosley Nursery. This yellow single hybrid tea rose earned a national rating of 9.5 during 1955-56. It is extremely hardy, especially in Ohio, and it seems possible that Golden Wings could be classified as a shrub rose. The foliage is glossy and from all reports is rather resistant to black spot and mildew. This fact alone makes it outstanding, considering the susceptibility to blackspot of most yellow varieties.

Audie Murphy is a most unusual new hybrid tea developed by Dr. Lammerts. An unusual two-toned red combination, the reverse sides of the petals are light red, while the upper surfaces are darker. Velvety in texture, this long stemmed rose, offered by Van Hevelingen, is bound to please many gardeners.

The hybrid tea Contentment, originated by Eugene Boerner of Jackson & Perkins Co., is an immense blooming pink variety, with a yellow suffusion and a pleasing fragrance. This unusually sturdy flower will undoubtedly appeal to gardeners who are seeking exhibition blooms for local shows.

Lady Luck, a pink hybrid tea originated by Andrew J. Miller, first catches the eye with its soft pink unfolding petals which become intensified as the bloom opens. It, too, is fragrant.

Golden Showers, a pillar rose of daffodil yellow color, has been chosen as an All-American Selection for 1957. Several factors entered into this selection. Among them are the free-flowering habit, the warm yellow coloring, the deeper colored buds and the bronzy stems. The leathery, glossy foliage, highly resistant to mildew and black spot, and the vigor of the canes, plus hardiness, are other points which favor the selection of this notable pillar rose.

Red Empress, introduced by Conard-Pyle, with its large hybrid tea like flowers, belongs in the ever-blooming group of climbers. The fragrant flowers are produced in clusters, and the color approaches cardinal red in cool weather.

Miniature roses are becoming increasingly popular for gardens and indoor decorations as well. They can be tucked in at the base of a wall, planted for accent in the rock garden or used for a dwarf hedge. Dwarfking, introduced by Jackson & Perkins, has blood-red blooms, with star-like edges, borne in clusters.

Robin, with its quilled petals, is almost a deep red miniature, highlighted with splashes of lighter red. The light green foliage makes a pleasing foil for the buds and blossoms and is amazingly free flowering Conard-Pyle rose.

Bit O' Sunshine is a yellow, semi-double miniature recommended for its fragrance and profusion of bloom. Little Buckaroo is bright red, with dark green, glossy foliage.

Audie Murphy, two-toned red hybrid tea

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A Park Within a Park

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A UNIQUE CONCEPT in park development and purpose is Bowman's Hill Wildflower Preserve, Washington Crossing, Pennsylvania. With its adjoining area, Penn's Woods, the Preserve has aroused the enthusiasm of conservationists, horticulturists, educators, historians and other lovers of the out-of-doors who enjoy unspoiled nature and take every opportunity to get close to it.

Washington Crossing Park, of which the Bowman's Hill Preserve is a part, has special historical significance. Nearby, General Washington and a small company of soldiers stealthily crossed the Delaware River, on Christmas night of 1776, to win an important victory in the battle of Trenton. A two mile stretch along the Delaware River, with rolling hills and wooded plots, is easy to reach and makes a mecca for tourists, hikers and picnickers. Despite wide roads, generous parking facilities and large picnic areas, week-end congestion frequently taxes the ingenuity of park attendants.

The Wildflower Preserve, covering 100 acres at the north end of Washington Crossing Park, came of age last year. Like many similar projects, it did not start as a dream. Rather, it was born as a nebulous idea during a conversation between the late Mrs. Henry Parry, then Chairman of Conservation of the Bucks County Pennsylvania Federation of Women's Clubs, and W. Wilson Heinitsh, an ardent conservationist. During subsequent discussions between Mr. Heinitsh and Mrs. Clarence C. Zantzinger, President of the Council for the Preservation of Natural Beauty of Pennsylvania, it came more clearly into focus.

In the following months many people, both official and lay, were drawn into the picture. Each added his tithe of physical and mental help. In October 1934, Dr. Edgar T. Wherry of the University of Pennsylvania, Mr. Wharton Sinkler and Mr. Heinitsh, as a committee, received authority from Washington Crossing Park Commission to establish a wildflower preserve on

100 acres of the park north of the Memorial Tower. Thus it was born.

Good fortune held from the start. Mrs. A. B. Ross and Mrs. Lynwood R. Holmes were added to the Bowman's Hill Wildflower Preserve Committee and W.P.A. was born at that time. During the next six years two and one half miles of trails were developed. Parking lots, rest rooms and a dam were also built by W.P.A. and hundreds of plants were collected and placed in the Preserve. The energy and resourcefulness of Mrs. Holmes, Mrs. Humbert Borton Powell, Mrs. Zantzinger, the late Mrs. Ross and Wilson Heinitsh carried the project over many rough places.

From the beginning, the objective was to establish as much as possible of the native flora of Pennsylvania in one area where there would be every assurance of continuing maintenance and protection. To this end garden clubs, women's clubs, patriotic societies, scout troops, naturalists groups, nurserymen, business firms and individuals under the leadership of the Conservation Council joined forces.

The collection of plants has grown until over 1,000 species native to Pennsylvania are now well established along trails in as natural an environment as can be simulated. All are clearly marked affording an excellent opportunity for botanical study. Sections of the trails to the number of 20 are sponsored by societies, clubs and individuals. Suitably marked are fourteen memorial plantings of great beauty and delicate charm. The exquisite painting by Mrs. Charles Platt of the floral border for the list of memorial plantings deserves special mention.

Fifteen acres of the Preserve were set aside originally as a "Picking Field" of common wildflowers for the purpose of demonstrating that there are native flowers that do not need protection. Unfortunately some of the species did not thrive and great confusion arose as to where picking should start and stop. So in 1934, this area was recreated by the preserve committee as a memorial reforestation project. The new development was named Penn's Woods, with Mrs. Clarence C. Zantzinger as Chairman of the Penn's Woods Committee. Here are assembled all species of woody plants indigenous to the state.

Please turn to next page

Many kinds of native trees and shrubs and wild flowers make Bowman's Hill Wildflower Preserve a fascinating place for plant lovers to visit

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Park Within a Park

Continued from page 97

Donations of memorial trees numbering over 200 have been made, while hundreds of shrubs have been added. Patriotic societies, clubs and individuals have thus honored living horticulturists and conservationists and memorialized those who have gone. On October 12, 1944 the formal dedication of Penn's Woods took place as part of the State's Tercentenary celebration of William Penn's birth.

Guided tours and illustrated lectures by Mrs. Pauline Buckingham, park naturalist, and Norman Fisher, botanist, are especially valuable during group visits. Between 50,000 and 100,000 persons visit the preserve each year, a graphic indication of the widespread interest in this unusual park.

Bowman's Hill Wildflower Preserve, recognized as unique in plan and highly successful in purpose, has been created by men and women from varied fields of endeavor. Because of its success, similar preserves are being developed in Michigan, Illinois, New Jersey, Massachusetts and Maine not to mention two others in Pennsylvania.

Low-growing Shrubs

Continued from page 74

thony Waterer, which is three feet high and has flat clusters of bright crimson flowers in July. Many branches die in the Winter, but it is another of those which luckily flowers in the new wood. Because of its small size it is excellent in the flower border with perennials and annuals.

The thunberg bush clover is very little known, yet is highly recommended because it flowers in late September. It dies to the ground during the Winter, yet from the base spring vigorous shoots which reach a height of four or five feet and arch, touching the ground, with their clusters of tiny rose-purple pea flowers. When seen for the first time it is a startling sight—a fitting shrub to close the season.

Bluebeard or caryopteris (shown on page 75), is an outstanding summer-flowering shrub, with superb blue flowers, seldom exceeding two feet in height. It flowers in mid-summer and early fall, making an attractive low mound. The variety Blue Mist is a soft blue, while Heavenly Blue is more intense in color. It grows best in light soil and full sun, and the foliage of Heavenly Blue becomes richly colored in late fall.

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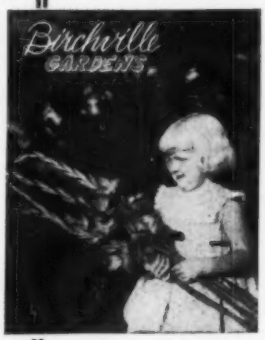

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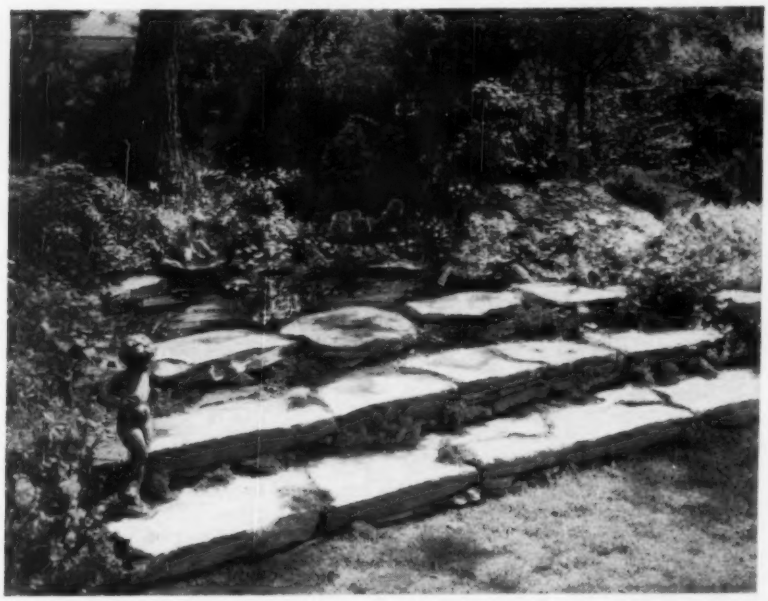
Step Up Your Garden

Continued from page 81

patio or terrace. It is wise to start simply and learn as you progress. Otherwise time and money are likely to be wasted in tearing out the partly finished steps in order to start all over again. Above all, plan the work carefully ahead of time and sketch your plans on paper before beginning operations. The principal requirements, aside from the materials themselves, are patience and a knack for following through the details as planned beforehand.

The care and patience that are necessary in all phases of good gardening are needed also for building steps. In addition, one's ingenuity is challenged. Well-constructed of suitable materials, steps will last for years without any upkeep at all, adding much to the charm and appearance of the surroundings.



Large fieldstones provide a setting for the planting of a variety of low growing rock plants which can be kept within bounds by occasional shearing. These informal steps make a pleasing approach to a pool developed in a natural setting.

Raspberries Worth Effort

Continued from page 79

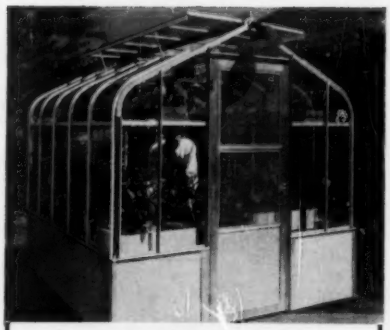
For years I have recommended a 5-10-10, 5-8-7 or the 7-7-7 formula. Now, on the basis of five years' results with 8-16-16, I offer my experience for whatever it is worth. This formula contains only one per cent more nitrogen than the 7-7-7, but more than double the phosphorus and potash. I have a number of experiments in process, using both (more and less) amounts of this formula, and perhaps later I can report more fully. It is important to apply fertilizer as early in the spring as possible.

I am often asked about pruning the canes, that is, cutting them back. I have pruned to a height of three, four and five feet, depending on the variety. I have two 50-foot rows of Milton, a new red raspberry that grows canes six to eight feet high. As yet, I do not know what height to cut Milton to obtain the largest crop. On the basis of three years of experience, I like this variety, since it produces well. The large fruit have an excellent flavor.

To date, the canes have taken 12° below zero without harm. It is my experience that the variety Latham yields its biggest crops when canes are cut to a height of five feet.

All my raspberries are mulched. After trying hay, shavings, sawdust, pine needles and shredded sugar cane, my first choice is hay, or straw. I mulch deeply between the rows, so that after the hay is settled, it has a packed depth of four to six inches.

One pleasant feature about raspberries is that they blossom after frost danger has passed. In 23 years I have lost only one crop because of low temperatures. From the time the berries start forming, and continuing through the bearing season, ample irrigation means a much larger crop. Unless rains come, I apply an inch and a half to two inches of water a week.



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Small Trees for Today's Gardens

Continued from page 77

adensis). A member of the pea family, its profuse, small, pea-like flowers, purple-pink, contrast with those of the white flowering dogwood.

Also a small tree, not over 35 feet in height, it is usually under 20 feet in most gardens. Its fruits are merely flat pods, but the autumn color of the foliage is a bright yellow. Although red bud does not have special appeal during all seasons, like the flowering dogwood, it has merit when planted at the edge of woodlands or in combination with the flowering dogwood.

A popular tree, especially when in flower, is the golden-chain tree or laburnum (color page 76). Two species are available and several hybrids which combine the best qualities of both. All golden-chains have pendulous clusters of yellow, pea-like flowers, somewhat similar to those of the wisteria, and when in full bloom make a brilliantly graceful display. However, they have no autumn color nor worthwhile fruits and give little shade because of their upright habit. They are, therefore, at their best when in full bloom in the spring.

No group of small trees has so many flowering and fruiting candidates as the Oriental flowering crab-apples. Least susceptible to the blight of the juniper rust disease, common on our native crab-apples, such as the double-flowered Bechtel's crab-apple, more than 100 varieties are offered. Twice that many are grown in the arboretums throughout the country.

Varieties of crab-apples differ considerably in flower and fruit, as well as in growth habit. As a rule, flowers appear profusely in the spring and are followed by small fruits, a quarter to a half inch in diameter (some are nearly two inches across) that turn bright red or yellow, or red and yellow, in the fall. Some fruits remain on the tree late into the fall or winter, affording excellent food for birds when deep snow covers other supplies. Crab-apples do not need repeated spraying every spring (as commercially grown apples do), and we have found at the Arnold Arboretum that one spray a year, and sometimes one every other year, is sufficient to keep most leaf eating insects under control.

The striking carmine crab-apple (shown in color on page 76) is one of the most popular red flowering kinds. The Japanese flowering crab-apple (*Malus floribunda*) is still widely grown, although it was one of the first introduced to this country from the Orient nearly a century ago. It has red flower buds and sweetly fragrant flowers that gradually fade to white, creating a marked red and white color combination. The yellow and red fruits of the Japanese flowering crab-apple are about the size of a large pea. Hybrids include doubles, like Dorothea, with pink flowers and bright yellow fruits, a half inch in diameter. Each of these crabs has a mound-like habit and seldom exceeds 20 feet in height.

Another desirable small ornamental tree is the star magnolia (*Magnolia stellata*), one of hardiest of all magnolias and an excellent candidate for the small garden, because even 50-year-old specimens are not much over 18 feet tall. Slow growing, the star-like, 15-petalled, conspicuous, fragrant,

White, bell-like flowers of Japanese snowbell appear in early summer

Sourwood flowers in the summer

white flowers appear very early in the spring before the leaves. A dense grower, it has clean foliage all summer long, which turns bronze in the fall.

Highway engineers are particularly partial to the Washington thorn (*Crataegus phaenopyrum*). Its dense growth and screening potentialities and its ability to grow in many kinds of soil, rich and poor, are points in its favor. Profuse clusters of small white flowers in early summer, scarlet autumn color and its bright scarlet fruits which often remain on plants all winter are other assets. Owners of small properties, likewise, value this native tree, actually one of the best, if not the best, among some 500 native and exotic hawthorns.

A tree not commonly seen in gardens, but truly superb, is the Japanese snowbell (*Styrax japonica*). Under 30 feet in height, it is wide spreading, with a flat top, often twice as broad as high. Small, white, waxy flowers, pendulous and bell-like, hang in profusion on the undersides of the branches. The foliage does not color in the fall, but it remains green very late in the season.

The taller growing, gracefully pyramidal southern sourwood (*Oxydendrum arboreum*) is usually a small tree in gardens where soil is acid. Its dark green, lustrous, laurel-like leaves become brilliant scarlet in the fall. Drooping clusters of small, white flowers appear in mid-summer when few trees or shrubs bloom.

The native blackhaw (*Viburnum prunifolium*), growing to 15 feet, merits consideration. Glossy green leaves turn brilliant red in the fall, and flat clusters of small white flowers in spring are followed by blue-black berries in the fall. This viburnum is often used as a substitute for hawthorns, since it is not susceptible to as many insect pests and diseases.

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Final Winter Lecture

THURSDAY, FEBRUARY 14 — "Alpine Flowers of Mt. Washington," Eleanor Broadhead, Salem, Mass. This lecture will be illustrated with colored slides.

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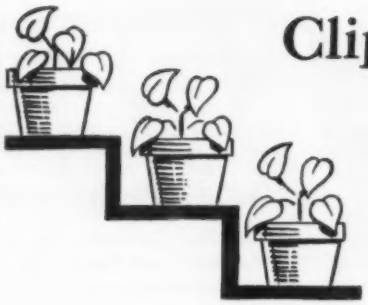

Clippings from CLUBS and SOCIETIES

Descanso Camellia Show

Mar. 2-10 are the dates of the Annual Descanso Camellia Show to be held at the Descanso Gardens at La Canada, Calif. A Camellia Arrangements Show, featuring camellias in all kinds of arrangements, will be the special feature on the 9th and 10th. Sponsors of the Show are the Los Angeles Camellia Council, Ltd., and the Department of Parks and Recreation of Los Angeles County. At the Descanso Gardens grow over 50,000 camellia plants, representing 400 varieties assembled from China, Japan, England and the southern United States.

Flower Arrangement Symposium

"Looking Forward" is the theme of the 1st Flower Arrangement Symposium of the Garden Club of Illinois to be held on Feb. 7, 9:30 A.M.–3:30 P.M., at the Eighth Street Theatre, Chicago, Ill. Speakers will include Francis F. Merriam, Mountain Lakes, N. J.; Ted Williams, San Antonio, Tex.; Alex Alexander of Miss.; and M. Benz, Houston, Tex. For further information about the Symposium write: The Garden Club of Illinois, Palmer House, 119 So. State St., Chicago 3.

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February Events

February 12, 13 and 14, in the Rooms of the Society. Exhibition of Valentine Flower Arrangements staged by members of the Four Seasons Garden Club. The show will be open from 12 noon until 5 P.M. on the 12th and from 9 A.M. to 5 P.M. on the 13th and 14th.

February 21, at 8 P.M. at the Academy of Natural Sciences, Lecture: "Exploring for Plants in Japan," by Dr. John L. Creech, past President of the American Horticultural Society. An executive of the New York Botanical Garden said of Dr. Creech that his experience in exploring for plant material on the mountain islands of Japan was almost unique. The lecture will be illustrated by slides.

New Officers

At the January meeting of the Council the following officers were elected: President, Mr. George R. Clark; Vice-Presidents, Carroll R. Wetzel, Esq., Mrs. Charles Platt, Mr. Charles Becker, Jr.; Secretary, Mrs. E. Page Allinson; Treasurer, Dr. J. Franklin Styer; Assistant Treasurer, John G. Williams, Esq.

At the annual meeting of the Society held on November 14th, the following were elected members of the Council to serve for a three year term beginning January 1, 1957:

Mr. W. Atlee Burpee, Jr., Mrs. John B. Carson, Mr. George R. Clark, Mrs. J. Norman Henry, Mr. Henry D. Mirick, Mrs. Charles Platt, Mrs. Donald P. Ross, Dr. J. Franklin Styer, Carroll R. Wetzel, Esq., and Mrs. Harry Wood.

Philadelphia Flower Show

March 25 to 30 inclusive at the Commercial Museum. The Horticultural Society will again sponsor a large part of the Show. There will be sections of gardens for sunny and shady locations, sections of rooms exhibiting indoor gardening, a day when the classes will be of particular interest to children and many other interesting features. As usual, members of the Society will receive free tickets to the Show.

Burrage Porch Award

The Albert C. Burrage Porch Prize, offered annually to an attractive porch, veranda, terrace or other addition to a home overlooking a garden, has been awarded to Mrs. Charles R. Codman of Gloucester, Mass. The citation reads as follows: "In front of the house a narrow terrace, paved and railed with marble and with the jet of a fountain falling in a sunken tank; below a circular terrace of greensward flanking a detached living room; both look down to the sea through carefully thinned woods over informal plantings of flowers and shrubs amid the ledges and bracken that make a most unusual garden of great charm; the whole created from a slope of rock, trees and catbriers by the taste and loving work of Mrs. Codman and her late husband."

—ALBERT C. BURRAGE, *Chairman*

COMING EVENTS

Feb. 7. Chicago. Flower Arrangement Symposium, Garden Club of Ill., Eighth Street Theatre.

Feb. 10-Mar. 3. Chicago. Azalea Show, Chicago Park District, Garfield & Lincoln Park Conservatories.

Feb. 14. Boston. Lecture: "Alpine Flowers of Mt. Washington", Eleanor Broadhead, Mass. Horticultural Soc., Horticultural Hall, 8 P.M.

Feb. 14-17. Macon, Ga. Annual Meeting, Am. Camellia Soc., Hotel Dempsey.

Feb. 16-24. Des Moines, Ia. Home & Flower show, Veterans Memorial Auditorium, Home Builders Assoc. of Des Moines.

Feb. 18. Georgetown, Mass. Antique and Flower Show, Country Gardeners of Georgetown, High School Auditorium.

Feb. 20. New York. Winter Garden Show, Horticultural Soc. of N. Y., Essex House, 157 West 58 St.

Feb. 21-22. New Orleans, La. 8th Annual Mardi Gras Show, "Flowers at the Mardi Gras—Presenting the Jewels", The Garden Guild, D. H. Holmes Co., Canal St.

Mar. 1-30. Natchez, Miss. Natchez Pilgrimage.

Mar. 1-2. Minneapolis, Minn. Annual Convention, Am. Carnation Soc., Hotel Leamington.

Mar. 2-3. Florence, S. C. Annual Winter & Spring Camellia Show, Florence Camellia Soc., Nat'l. Guard Armory, 1115 W. Evans St.

Mar. 6-8 and 13-15. Williamsburg, Va. 10th Annual Williamsburg Garden Symposium.

Williamsburg Garden Symposium

Mar. 6-8 and 13-15 are the dates of the two three-day sessions of the 1957 Williamsburg Garden Symposium to be held at Colonial Williamsburg, Va. The program will include lectures by leading horticulturists and landscape architects, as well as tours around Williamsburg and nearby Jamestown.

Gardens at Palace in Williamsburg

Speakers in the first session will include Dr. R. Milton Carleton, Alden Hopkins, J. Gregory Conway, Walter L. Chambers, John L. Creech, Fairfield Osborn, Dr. George H. M. Lawrence and Dr. Donald Wyman. During the second session Ralph Bailey, Alden Hopkins, Mrs. William F. Lowry, John Brimer, Dr. Russell J. Seibert, H. I. Williams, Dr. S. M. Emsweller and T. H. Everett will be speakers.

For additional information about the 11th Annual Symposium write: Mrs. Cecil Cunningham, Colonial Williamsburg, Va.

Hemerocallis Society Officers

The following officers of the American Hemerocallis Society will serve for 1957: president, Wilmer B. Flory, Logansport, Ind.; 1st vice-president, Mrs. Robert L. Emery, New Orleans, La.; 2nd vice-president, Robert M. Kennedy, Camden, S. C.; 3rd vice-president, Allen Wild, Sarcoxie, Mo.; secretary, Mrs. Daisy L. Ferrick, Topeka, Kan.; treasurer, Mrs. Bright Taylor, Ocala, Fla. The 1957 Annual Convention of the Society will be held at Tulsa, Okla., June 19-22.

Biltmore Rose Garden

Dr. Fred J. Nisbet, Superintendent of the Biltmore Estate at Asheville, N. C., has announced that a rose test garden will be one of the new features of the Estate next June. This addition to the present Rose Garden will furnish information about growing roses in the southern highlands, the Piedmont and other sections with similar climates. The French Renaissance mansion and the 12,000-acre gardens, designed by Frederick Law Olmsted for George Vanderbilt from 1890 to 1895, are open to the public.

Pilgrimage to Natchez

Six different tours, covering visits to 30 beautiful ante-bellum homes in old Natchez, Miss., have been scheduled for the Annual Natchez Pilgrimage, Mar. 1-30. Among the homes will be Hawthorne, 1814, Monmouth, 1818, Cherokee, 1794, Elmscourt, 1810, Hope Farm, 1774-1789, The Burn, 1832, and Bontura, 1790-1830. Two Garden Clubs of Natchez are sponsors of the event, which enables the public to visit these historic old houses of the deep South, with their old-fashioned gardens of azaleas, camellias, sweet olive, hedges of boxwood and live oaks hung with Spanish moss. For information write: Pilgrimage Headquarters, Elks Club, Natchez.

1957 Rose Tournament

Jackson & Perkins Co. of Newark, N. Y., announces that garden clubs all over the country may participate in the 2nd Annual Sterling Bowl Tournament on June 26-27 to be held in conjunction with the 26th Annual Rose Festival at their 17-acre Rose Garden in Newark. Top arrangers from clubs throughout the country may compete for the $5,000 perpetual challenge trophy and eight sterling silver prizes. Director of the Tournament will be Mrs. Edna Whitsitt, author, teacher and judge. This year Jackson & Perkins Co. will also celebrate its 85th anniversary. For information write: Jackson & Perkins Co., Newark, N. Y.

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An Historic Tour of Gardens

Henry Sowerby

THE TOUCH of the English or Scottish gardener in many of our New England estates reminds us that the "old country" genius is rooted deep in the aesthetics of our landscape. The close ties are of long standing, but they were not of natural growth. They were deliberately fostered—in particular by no less ardent a horticulturist than Thomas Jefferson.

Jefferson and John Adams, in April 1786, made an extended tour of a number of famous English gardens. It was Jefferson's project. He was planning to recast the landscaping of his sugarloaf hill at Monticello. He wanted to see the latest methods of English gardening, learn the rules they worked on, and find out the approximate cost of the upkeep.

Adams, then Minister in London, acted as his guide. Adams admired the gardens, but he thought that over in America there were more urgent matters to attend to than laying out gardens and parks.

Jefferson, who found time for everything that seemed beautiful and worthwhile, went into garden after garden with irresistible enthusiasm. In each state visited, he jotted down notes. Later, when Monticello was extending hospitality to a steady stream of eminent callers, those notes and the landscaping of the hill became widely known.

And through Jefferson, Thomas Whately and his "Observations on Modern Gardening" also became known. Jefferson carried this book (a revelation of new ideas on landscape) around with him on the tour and consulted it at every point of call. His notes underline the details that interested him. These included the architecture of Doric temples, pagodas, rotundas and bridges, for such embellishments, though not strictly in the new English style of landscape, were still a conspicuous feature of the more elaborate gardens.

The new and essentially English style opened out before them in what was known as Pope's garden at Twickenham, overlooking the Thames. Pope, the poet, like Whately, the politico-economist, had been a pioneer of the new order. The English garden had broken completely with the artificial designs of the Continent. It had moved away from the French and Italian parterres crowded with geometrical beds in squares, circles, rec-

The Old Physic Garden at Chelsea from an engraving made about 1750

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tangles and rhomboids, intersected by straight gravel paths and studded with statuary, jets d'eau, urns and temples. It had reverted to nature. Nature must be helped and humored—not forced or contradicted. Each knoll, or depression, or flat must be allowed to develop its own individuality. The massive avenues of beech or oak in their rigid straight-line formality must soften into wavy lines. The sharp distinction between pleasure grounds and wilderness or park must disappear, merging all into a single coordinated design.

This new concept made for peace and serenity, as the travelers noted at Pope's garden. It was only a five-acre estate, but its hillside contour, the grassy slope shelving gently down from the house and garden to the river 30 yards below, dotted as if at random by little copses, was a delight.

The two companions met his same style in gardens and parks on a grander scale. Among these was Leasowes, more than 100 miles away to the northwest —a 150-acre place that had some pretensions, although it was all the work of another poet, and a man of small means at that. William Shenstone had succeeded in merging farmland and garden into a compact whole. This place appealed to Whately rather than to Jefferson. It had too little of the parkland to impress the landscapist of Monticello. It was a strange garden, loaded with emotional meaning. Weeping willows by the water, the heavy gloom of the yews down in the valley, the solemnity of the grove dedicated to Virgil and a whole museum of urns, statues and inscriptions produced a classical atmosphere of pagan mystery.

More to Jefferson's taste was the smaller Moor Park, some miles north of London. This layout centered upon a striking display of Corinthian architecture flanked by arched colonnades, while an elegant arrangement of parterres on different levels, descending toward a lake and connected with each other by stone steps, made what Sir William Temple called "the perfectest figure of a garden I ever saw".

In all the larger estates visited—Pain's Hill, Hagley, Woburn, Stow, and the 2500-acre Blenheim—the same natural use of plantations, of water, of sloping land, valleys and wilderness, produced a mellow mood of tranquility that seemed to arise from nature itself.

Such sights and comments may be run-of-the-mill knowledge in our horticulture of today. But they tell of methods that came to our shores as a novelty after Jefferson had taken a whole month out from pressing diplomatic affairs to tour the gardens of England.

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Considering Perennials

Continued from page 78

everywhere. Their flowers add grace and color to bouquets and arrangements, and the heart-shaped foliage is distinctly ornamental, often intriguingly mottled or crinkled. Flower spikes of numerous bell-like blossoms are graceful and combine felicitously with less refined plant material. Early summer is the high point for this perennial.

Monarda Croftway Pink and the new seedling of this variety known as Granite Pink are desirable perennials for early summer.

Most white coral bells have been "weak sisters", lacking stamina and vivacity. However, the stocky French White developed in New Hampshire is an exception to the rule. Stalks of cloudy white bells, arranged in winsome spikes, appear on 18-inch stems. Like all coral bells, it appreciates rather light soil, in sun or part shade. Set crowns about an inch deeper than with most other plants to prevent heaving in winter.

Blanket flowers, or gaillardias, are popular for summer cutting, even though the gaily-hued blossoms are garish to some. Unfortunately, most hybrid selections are likely to prove transient in stern climates, particularly during wet winters. A relatively new introduction called Attraction is more resistant to such rigors, it seems. Hearty three-inch blooms of tawny old gold, flushed red at the centers, appear during June and July. Plants grow two-and-one-half feet and need a well-drained soil in a sunny location.

Bee-balm or monarda flourishes in sun or shade, if grown in fairly moist soil and divided every third spring. Neglect eventually causes plants to degenerate into irregular weedy patches. A pungent minty scent pervades both leaf and flower of this perennial which blossoms freely from June till late August. A windblown, unstudied attractiveness describes the blooms which appear on sturdy stems, two-and-one-half to three feet tall.

Monarda Granite Pink, raised at the University of New Hampshire, is a new seedling of that noteworthy variety Croftway Pink. However, it grows only 20 inches tall, and the blossoms are an exquisite shade of clean rose pink. Its compact habit and desirable color suggest that Monarda Granite Pink will be widely planted.

Dwarf Balloon-Flower

Platycodons are numbered among the most obliging border perennials, especially for their generous clusters of cool tinted flowers in summer. These balloon-flowers guarantee years of effortless enjoyment in average soil neither too wet nor shaded. The variety Alpine only grows 18 inches tall and has large steel-blue bells. Probably a form of *Platycodon mariesi*, it differs primarily in that it comes true from seed with no white volunteers.

A host of outstanding varieties of summer phlox (*Phlox paniculata*), with huge flowerheads, are available from nurserymen. The variety Thunderbolt, a scarlet-tangerine, is making its debut this year. So, too, is Twilight, a heliotrope-mauve shade. *B. Symons-Jeune*, a sturdy-stemmed English hybrid, has rose pink florets, with dashing red eyes. None of these will normally

Hetz Midget, a new miniature arborvitae which grows only a foot tall, shows promise for low hedges or for an accent in rock gardens and borders.

grow more than two-and-one-half feet tall, and all have extremely large flower trusses.

Among the fall asters, especially desirable are two 15-inch dwarfs, compact and literally buried under masses of fetching daisy-like blooms. Pink Bouquet is a lively rose-pink shade. Likewise, White Fairy seems to be superior to other white varieties now offered. To maintain their trim appearance, divide the clumps annually in the spring.

Late-Flowering Trollius

Trollius or globe-flower, with its decidedly rounded blossoms, makes its big show during April and May. However, the species *T. ledebouri,* with its great, flaring three-inch blossoms of golden orange, do not appear until June or early July. Often occasional flowers appear again in late summer. Ranging in height from two to two-and-one-half feet the palmate foliage makes an attractive appearance throughout the season. It thrives in rich, moist soil in full sun or light shade. However, all forms of trollius make sad looking plants in poor soil.

Heliopsis Light of Lodden is a far more suitable choice for heavy duty in poor soils. Perhaps its most redeeming quality is the tireless production of finely rayed two-and-one-half-inch daisies of pure yellow. This plant provides a source of cut flowers from late June to fall. A somewhat coarse, bushy plant, it grows to three-and-one-half feet. For areas where summers are exceptionally dry and winters severe, this is a most useful candidate.

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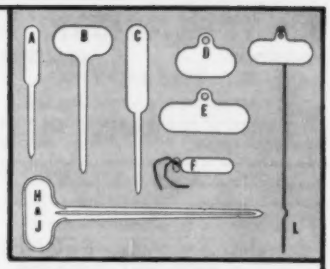

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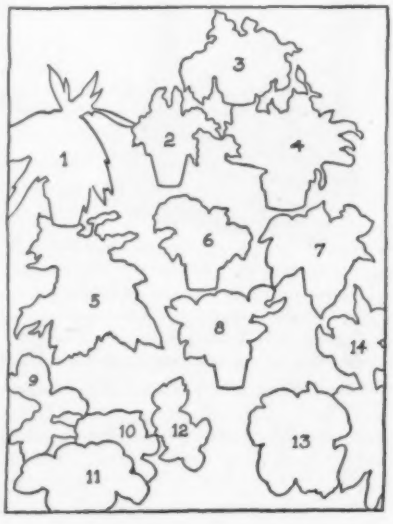
Too Late To Be Corrected

On page 37 of our January issue, we featured a color plate illustrating unusual house plants. Unfortunately, the identification key became jumbled, with the result that the plants were incorrectly numbered. It was not the intention of the editors, we assure you, to offer our readers a puzzle in disguise, but this error was discovered too late to be corrected. Below is the accurate order for the accompanying key to the black and white rendition of the color plate.



Identification Key

1. *Dracaena deremensis longi*
2. *Cryptanthus zonatus zebrinus*
3. *Begonia Skeezar*
4. *Croton variety*
5. *Begonia Corallina de Lucerna*
6. *Begonia rex Princess Margaret*
7. *Anthurium crystallinum*
8. *Geogenanthus undatus*
9. *Dieffenbachia picta Rudolph Roehrs*
10. *Fittonia verschaffelti*
11. *Maranta massangeana*
12. *Fittonia verschaffelti pearci*
13. *Begonia rex Glory of St. Albans*
14. *Monstera friedrichsthali (above) Philodendron hastatum variegatum (below)*

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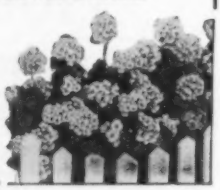

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Horticultural Council Highlights

THE ELEVENTH ANNUAL Congress of the American Horticultural Council was held at Michigan State University, East Lansing, October 21-23. The Council, whose membership includes both organizations and individuals, acts as a clearing house for the horticultural projects and problems that arise in this broad field of endeavor.

The meeting was planned by Dr. Harold B. Tukey, Head of the Department of Horticulture at Michigan State, and Dr. Donald Watson. At the opening session, Dr. Tukey spoke on his experiences during his recent trip to Southeast Asia.

Stanley Andrews, executive director of the National Project on Agricultural Communications, served as moderator for a panel discussion on "Horticultural Communications". Speaking on education, Ira Glick, of Glick & Lorwin, New York, outlined the program of the Society of American Florists for providing gardening information through schools. Margaret Herbst, Public Relations Councilor, New York, stressed that the horticultural industry should have a more aggressive policy in the field of public relations.

Discussing radio and television, Dr. Armand Hunter, of Michigan State, emphasized their effectiveness in telling the story of gardening. Earl Richardson, also of Michigan State, explained how horticultural bulletins interpret the work of research staffs to the gardening public.

Carol Woodward, Garden Editor of the Macmillan Company, stressed the vital importance of gardening books and the consequent need of competence and integrity on the part of authors, editors and publishers.

One of the outstanding contributions presented at the Congress was a report on "The Munsell Color Fan" by Dorothy Nickerson, of the Agricultural Marketing Service, U. S. D. A. The "fan", a practical-use chart which opens and closes like a folding fan, will permit easy but accurate color descriptions of flowers. This fan, when made available, will be keyed specifically to flower colors.

E. A. Eichstedt, Detroit landscape architect, presented a highly informative talk on "Recent Landscape Accomplishments at General Motors Technical Center." Dr. Fred Meyer, of the Missouri Botanical Garden, St. Louis, spoke on "Woody Plants of European Arboretums and Nurseries."

The graduate students' reports on plant research were also highlights of the three-day meetings. Subjects discussed included "Effect of Photoperiod on Rhododendron," by Harold Davidson; "Deficiency Symptoms in Grapes," by Ernest L. Bergman; "Radioactive Tracers for Measuring Loss of Nutrients from Plants," by Harold B. Tukey, Jr.; "Bitterness in Carrots," by Paul Bessy; "Fantastic Effects of Gibberellic Acid on Horticultural Plants," by John Bukovac; and "Application of Research," by Jack Hill.

The Long-Range Planning Committee reported that the Council is making plans to obtain a grant in order to establish a permanent secretariat. Also discussed were plans to invite the International Horticultural Congress to convene in this country and to establish judging schools in horticulture.

At the President's dinner, citations for important contributions to horticulture were awarded to Ethel Zoe Bailey, of the Bailey Hortorium, Cornell University; Ferry-Morse Seed Co., Detroit; P. Mark Parthemore, of the J. Horace McFarland Co., Harrisburg, Pa.; George H. Pring, Missouri Botanical Garden; W. R. Leslie, Horticultural Experiment Station, Morden, Manitoba.

Announcement was made that the 1957 Congress will be held in Denver, Colorado.

Cream of the Gladiolus

Continued from page 87

and nearest green available today. Erin and Shamrock are chartreuse-yellows. Green Thumb and Green Ice are greenish-whites, and the latter has a foliar chlorosis after the bloom spike has formed which does not harm the spike formation.

Since wire worms and bacterial scab are on the increase in gardens, control measures must be used. There are several new chemicals that may be used for dipping the corms or for applying in rows. A mixture of captan and lindane, aldrin, lindane or any of several new chemicals can be used as protective repellents for soil treatment, as fungicides and contact insecticides. By all means, treat your bulbs before planting to insure yourself a continuous supply of clean, healthy blooms all summer.

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When spring bulbs forge their way through the cold ground, braving snow and the chill winds of late winter, we are confident that another growing season is unfolding. Hyacinths, crocuses and the dainty glory-of-the-snow are featured in this heartwarming picture, recorded by the camera in a rare moment.